SHEET 1 OF 7

### SERIAL NO. ATTY. DOCKET NO. 5918/FPS/MMCS/APC/DV 09/943,955 INFORMATION DISCLOSURE CITATION IN AN RECEIVED **APPLICATION** AUG 0 1 2002 (PTO-1449) **Technology Center 2100 APPLICANT** SHANMUGASUNDRAM et al. JUL 3 1 2002 FILING DATE **GROUP** August 31, 2001 2122 U.S. PATENT DOCUMENTS **EXAMINER'S** FILING DATE INITIALS PATENT NO. DATE NAME CLASS **SUBCLASS** LTUE 01/03/89 4,796,194 Atherton 08/20/86 5,089,970 02/18/92 Lee et al. LTUE 10/05/89 5,108,570 04/28/92 Wang 03/30/90 LTUE LTUE 5,220,517 06/15/93 Sierk et al. 08/31/90 LTUE 5,236,868 08/17/93 Nulman 04/20/90 5,260,868 11/09/93 Gupta et al. 10/15/91 LTUE 03/15/94 5,295,242 Mashruwala et al. 11/02/90 LTUE 5,309,221 05/03/94 Fischer et al. LTUE 12/31/91 5,329,463 07/12/94 Sierk et al. 01/13/93 LTUE 5,367,624 11/22/94 Cooper 06/11/93 LTUE 03/14/95 5,398,336 LTUE Tantry et al. 06/16/93 LTUE 5,402,367 03/28/95 Sullivan et al. 07/19/93 04/18/95 5,408,405 Mozumder et al. LTUE 09/20/93 LTUE 5.410.473 04/25/95 Kaneko et al. 12/16/92 FOREIGN PATENT DOCUMENTS **EXAMINER'S** Translation INTTIALS PATENT NO. DATE COUNTRY CLASS SUBCLASS No 01-283934 LTUE 11/15/89 Japan X LTUE 2,050,247 08/29/91 Canada X OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Dishon, G., D. Eylon, M. Finarov, and A. Shulman. "Dielectric CMP Advanced Process Control Based on LTUE Integrated Monitoring." Ltd. Rehoveth, Israel: Nova Measuring Instruments. Runyan, W. R., and K. E. Bean. 1990. "Semiconductor Integrated Circuit Processing Technology." pg. 48. LTUE Reading, Massachusetts: Addison-Wesley Publishing Company. **EXAMINER DATE CONSIDERED** /Lynette Umez Eronini/ (09/07/2006)

SHEET 2 OF 7

## INFORMATION DISCLOSURE CITATION IN AN APPLICATION

(PTO-1449)

ATTY. DOCKET NO. 5918/FPS/MMCS/APC/DV SERIAL NO. 09/943,955

RECEIVED

AUG 0 1 2002

Technology Center 2100

APPLICANT

SHANMUGASUNDRAM et al.

FILING DATE
August 31, 2001

GROUP 2122

JUL 3 1 2002 E

(c),			U.S. PATENT DOCUMENTS			
EXAMILES INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DAT
LTUE	5,490,097	02/06/96	Swenson et al.			08/06/93
LTUE	5,495,417	02/27/96	Fuduka et al.			03/16/93
LTUE	5,497,316	03/05/96	Sierk et al.			04/04/95
LTUE	5,503,707	04/02/96	Maung et al.			09/22/93
LTUE	5,508,947	04/16/96	Sierk et al.		<u> </u>	05/13/94
LTUE	5,629,216	05/13/97	Wijaranakula et al.			02/27/96
LTUE	5,657,254	08/12/97	Sierk et al.			04/15/96
LTUE	5,661,669	08/26/97	Mozumder et al.			06/07/95
LTUE	5,694,325	12/02/97	Fukuda et al.			11/22/95
LTUE	5,698,989	12/16/97	Nulman			09/13/96
LTUE	5,719,495	02/17/98	Moslehi			06/05/96
LTUE	5,740,429	04/14/98	Wang et al.			07/07/95
LTUE	5,751,582	05/12/98	Saxena et al.			09/24/96
LTUE	5,754,297	05/19/98	Nulman			04/14/97
LTUE	5,764,543	06/09/98	Kennedy			06/16/95
		rol	REIGN PATENT DOCUMENTS			
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation Yes No
LTUE	2,165,847	08/29/91	Canada			x
LTUE	2,194,855	08/29/91	Canada		<u> </u>	х
	ОТН	RART (Incl	uding Author, Title, Date, Pertine	nt Pages, Etc	)	
LTUE	Zorich, Robert. California: Acad		ok of Quality Integrated Circuit Mac.	nufacturing. p	p. 464-498 Sa	an Diego,
LTUE	Rampalli, Prasac	l, Arakere Ran Managing Equ	nesh, and Nimish Shah. 1991. CEP1 ipment Reliability and Availability			
EXAMINER	/Lyne	ette Umez	DATE CONSIDER Eronini (09/07/200			

SHEET 3 OF 7

						SHEET 3		
				ATTY. DOCKET N		SERIAL N		
INI	FORMATION	DISCLOS	SURE	5918/FPS/MMC	S/APC/DV	09/943,9	355.	
	CITATIO					DECE	\/Cr	
Ī	APPLIC					RECE		,
/6	E (PTO-					AUG 0 1	2002	
1011	- 40 '	•		APPLICANT	Ta	chnology Co	otor 01	
	mm			APPLICANT SHANMUGAS	SUNDRAN	l et al.	niter 21	00
1月3	1 2002 5			FILING DATE	·	GROUP		<del></del>
\ <u>~</u> .	\$ /			August 31, 200	1	2122		
(VI) a r	RADELAS	7. Davidson	U.S. PATENT I	OCUMENTS			44: A.G	
EXAMINERS	executives the state of the		es productiviti in 1918 (A)	विक्रुवेद्धकेत् <sub>य प्रदे</sub> शिति ति ति विक्राव <u>र</u> ी	di Grando de la Contra de la Co		FILIN	G DATE
INITIALS	PATENT NO.	DATE		NAME	CLASS	SUBCLASS		
LTUE	5,808,303	09/15/98	Schlagheck et	al.			01/29/	97
LTUE	5,838,595	11/17/98	Sullivan et al.				11/25/	96
LTUE	5,883,437	03/16/99	Maruyama et a	J.			12/28/	95
LTHE	5,910,011	06/08/99	Cruse				05/12/	97
LTHE	6,054,379	04/25/00	Yau et al.				02/11/	
		FO	REIGN PATEN	T DOCUMENTS:				
EXAMINER'S INITIALS					1			
Millor	PATENT NO.	DATE	"	DUNTRY	CLASS	SUBCLASS	Yes	slation No
LTUE	05-151231	06/18/93	Japan			<u></u>		X
LTUE	05-216896	08/27/93	Japan					X
LTUE	05-266029	10/15/93	Japan	-			1	Х
LTUE	06-110894	04/22/94	Japan		1			X
LTUE	06-176994	06/24/94	Japan			· · · · · · · · · · · · · · · · · · ·		X
LTUE	06-252236	09/09/94	Japan					х
LTUE	06-260380	09/16/94	Japan					х
LTUE	08-149583	06/07/96	Japan		1	···	х	
LTUE	09-34535	02/07/97	Japan		1		x	
LTUE	EP 0877308 A2	11/11/98	Europe			<del></del>	X	
LTUE	11-67853	03/09/99	Japan		1		х	
LTUE	1072967A3	11/21/01	Europe				X	
	OTH	ER ART (Inc	uding Author, 7	itle, Date, Pertiner	t Pages, Etc	<b>3</b>		
LTUE	Moyne, James R.,	Nauman Chau	dhry, and Roland	Telfeyan. 1995. "/	Adaptive Exte	ensions to a M	lulti-Bra	anch
HIOE	Run-to-Run Contro	oller for Plasm	a Etching." Journ	al of Vacuum Scien	ce and Techn	ology. Ann A	rpor,	
	Movne, James Ro	lty of Michigan	Arnon Hurwitz	ology Manufacturing and John Taylor. At	Center.	'A Process In	depende	4
LTUE	Run-to-Run Contro	oller and Its Ap	plication to Che	nical-Mechanical Pl	anarization."	SEMINEEE	Advanc	ed
	Semiconductor Ma	nufacturing C	onference and W	orkshop. Ann Arbor,	Michigan: T	The University	of Mic	higan,
	Electrical Engineer	ing & Comput	ter Science Cente	r for Display Techno	ology & Man	ufacturing.		
EXAMINER			In	ATT CONSTRU	`			
	/=	ha II		ATE CONSIDEREI	J			
	/Lynet	ce umez	Eronini/  (	09/07/2006)				

SHEET 4 OF 7 SERIAL NO. ATTY. DOCKET NO. 09/943,955 5918/FPS/MMCS/APC/DV INFORMATION DISCLOSURE CITATION IN AN RECEIVED **APPLICATION** AUG 0 1 2002 (PTO-1449) Technology Center 2100 APPLICANT SHANMUGASUNDRAM et al. JUL 3 1 2002 **GROUP** FILING DATE 2122 August 31, 2001 U.S. PATENT DOCUMENTS **EXAMINER'S PATENT** FILING TILE CLASS DATE NAME SUB-INITIALS APPLICATION CLASS NO. Computer Integrated Manufacturing Techniques Arackaparambil 09/363,966 07/29/99 LTUE et al. 09/469,227 Somekh et al. Multi-Tool Control System, Method and 12/22/99 LTUE Medium System and Method of Exporting or Importing 09/619,044 07/19/00 Yuan LTUE Object Data in a Manufacturing Execution System LTUE 09/637,620 08/11/00 Generic Interface Builder Chi et al. 09/656,031 09/06/00 Chi et al. Dispatching Component for Associating Manufacturing Facility Service Requestors with LTUE Service Providers FOREIGN PATENT DOCUMENTS **EXAMINER'S INITIALS** PATENT NO. COUNTRY DATE CLASS SUB-CLASS Yes OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Zhou, Zhen-Hong and Rafael Reif. August 1995. "Epi-Film Thickness Measurements Using Emission Fourier LTUE Transform Infrared Spectroscopy—Part II: Real-Time in Situ Process Monitoring and Control." IEEE Transactions on Semiconductor Manufacturing, Vol. 8, No. 3. Telfeyan, Roland, James Moyne, Nauman Chaudhry, James Pugmire, Scott Shellman, Duane Boning, William Moyne, Arnon Hurwitz, and John Taylor. October 1995. "A Multi-Level Approach to the Control of a LTUE Chemical-Mechanical Planarization Process." Minneapolis, Minnesota: 42<sup>nd</sup> National Symposium of the American Vacuum Society. Chang, E., B. Stine, T. Maung, R. Divecha, D. Boning, J. Chung, K. Chang, G. Ray, D. Bradbury, O. S. Nakagawa, S. Oh, and D. Bartelink. December 1995. "Using a Statistical Metrology Framework to Identify LTUE Systematic and Random Sources of Die- and Wafer-level ILD Thickness Variation in CMP Processes." Washington, D.C.: International Electron Devices Meeting.

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

/Lynette Umez Eronini/

DATE CONSIDERED

(09/07/2006)

**EXAMINER** 

SHEET 5 OF 7

## INFORMATION DISCLOSURE CITATION IN AN APPLICATION

ATTY. DOCKET NO.
5918/FPS/MMCS/APC/DV

SERIAL NO. 09/943,955

RECEIVED

AUG 0 1 2002

Technology Center 2100

YENTA (P

(PTO-1449)

APPLICANT
SHANMUGASUNDRAM et al.

FILING DATE

GROUP 2122

	<b>()</b>				August 31, 2001		2122			
₹ To	AUTE N		U.S. PA	TENT	OCUMENTS					
EXAMINER'S INITIALS	PATENT APPLICATION NO.	FILING DATE	NAME		TITLE			CLASS		UB- LASS
LTUE	09/655,542	09/06/00	Yuan	Palette	a, Method and Medium s to Transform an App ce for a Service	_				
LTUE	09/725,908	11/30/00	Chi et al.	1 *	ic Subject Information ge Services of Distribut					
LTUE	09/800,980	03/08/01	Hawkins et al.	Dynam	ic and Extensible Task	Guide				
LTUE	09/811,667	03/20/01	Yuan et al.		olerant and Automated re Workflow	Computer				
LTUE	09/927,444	08/13/01	Ward et al.	1 -	ic Control of Wafer Pronductor Manufacturing	•	hs in			<u> </u>
LTUE	09/928,473	08/14/01	Koh		ervices Layer for Provi	•				
			FOREIGN	PATEN	T DOCUMENTS	al de la companya de	ensterna			
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY		CLASS			SUB- CLASS		Rottella
				<del>                                     </del>				··········	You	No
The second of the second	•	THER A	RT (Including A	uthor, I	itle, Date, Pertinent )	ages, Etc.)		City in the second		
LTUE	Dishon, G., M February 1990	l. Finarov, 1 6. "On-Lin	R. Kipper, J.W. ( e Integrated Met	Curry, T.	Schraub, D. Trojan, 4 or CMP Processing." S narization Conference.	h Stambaugt	ı, Y. Li a	nd J. Be	n-Jac	юb.
LTUE	Smith, Taber,	Duane Bor	ning, James Moy	ne, Arno	n Hurwitz, and John C trol." Santa Clara, Cal	•		-	_	
LTUE	Shellman, and	John Taylo		6. "Run	nes Moyne, Roland Tel by Run Control of Che				' IEE	SE
LTUE	SEMI. [1986]	1996. "Sta			Measurement of Equip	ment Reliab	ility, Ava	ilability.	and	
EXAMINER	/Lv	nette	Umez Eroni	1	ATE CONSIDERED (09/07/2006)					

SHEET 6 OF 7 SERIAL NO. ATTY, DOCKET NO. 09/943,955 5918/FPS/MMCS/APC/DV INFORMATION DISCLOSURE RECEIVED -CITATION IN AN APPLICATION AUG 0 1 2002 (PTO-1449) **Technology Center 2100** APPLICANT SHANMUGASUNDRAM et al. **FILING DATE GROUP** August 31, 2001 2122 TE TRADE U.S. PATENT DOCUMENTS **EXAMINER'S PATENT** FILING APPLICATION INITIALS DATE NAME CLASS TILE SUB-NO. CLASS Experiment Management System, Method Krishnamurthy et 09/928,474 08/14/01 LTUE and Medium al. FOREIGN PATENT DOCUMENTS **EXAMINER 5** INITIALS COUNTRY PATENT NO. DATE CLASS Translation SUB-CLASS Yes No OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Van Zant, Peter. 1997. Microchip Fabrication: A Practical Guide to Semiconductor Processing. Third Edition, LTUE pp. 472-478. New York, New York: McGraw-Hill. Campbell, W. Jarrett, and Anthony J. Toprac. February 11-12, 1998. "Run-to-Run Control in Microelectronics LTUE Manufacturing." Advanced Micro Devises, TWMCC. Edgar, Thomas F., Stephanie W. Butler, Jarrett Campbell, Carlos Pfeiffer, Chris Bode, Sung Bo Hwang, and LTUE K.S. Balakrishnan. May 1998. "Automatic Control in Microelectronics Manufacturing: Practices, Challenges, and Possibilities." Automatica, Vol. 36, pp. 1567-1603, 2000. Moyne, James, and John Curry. June 1998. "A Fully Automated Chemical-Mechanical Planarization Process." LTUE Santa Clara, California: VLSI Multilevel Interconnection (V-MIC) Conference. SEMI. July 1998. New Standard: Provisional Specification for CIM Framework Domain Architecture. LTUE Mountain View, California: SEMI Standards. SEMI Draft Doc. 2817. Consilium. August 1998. Quality Management Component: QMCTM and QMC-LinkTM Overview. Mountain LTUE View, California: Consilium, Inc. Chemali, Chadi El, James Moyne, Kareemullah Khan, Rock Nadeau, Paul Smith, John Colt, Jonathan Chapple-LTUE Sokol, and Tarun Parikh. November 1998. "Multizone Uniformity Control of a CMP Process Utilizing a Pre and Post-Measurement Strategy." Seattle, Washington: SEMETECH Symposium. Consilium. 1998. FAB300TM. Mountain View, California: Consilium, Inc. LTUE Khan, Kareemullah, Victor Solakhain, Anthony Ricci, Tier Gu, and James Moyne. 1998. "Run-to-Run Control LTUE of ITO Deposition Process." Ann Arbor, Michigan. **EXAMINER** DATE CONSIDERED

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

(09/07/2006)

<u>/Lvnette Umez Eronini/</u>

SHEET 7 OF 7 SERIAL NO. ATTY, DOCKET NO. 5918/FPS/MMCS/APC/DV 09/943,955 INFORMATION DISCLOSURE RECEIVED CITATION IN AN **APPLICATION** AUG 0 1 2002 (PTO-1449) SHANMUGASUNDRAM et al. JUL 3 1 2002 **FILING DATE** GROUP August 31, 2001 2122 U.S. PATENT DOCUMENTS **EXAMINER'S** PATENT PILING INITIALS APPLICATION NAME CLASS DATE TTILE SUB-NO. CLASS FOREIGN PATENT DOCUMENTS EXAMINER'S INITIALS PATENT NO. DATE COUNTRY CLASS SUB-Translation CLASS OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Consilium. January 1999. "FAB300™: Consilium's Next Generation MES Solution of Software and Services LTUE which Control and Automate Real-Time FAB Operations." www.consilium.com/products/fab300\_page.htm#FAB300 Introduction Consilium. July 1999. "Increasing Overall Equipment Effectiveness (OEE) in Fab Manufacturing by Implementing Consilium's Next-Generation Manufacturing Execution System - MES II." Semiconductor LTUE Fabtech Edition 10. LTUE Consilium Corporate Brochure. October 1999. www.consilium.com Moyne, James. October 1999. "Advancements in CMP Process Automation and Control." Hawaii: (Invited paper and presentation to) Third International Symposium on Chemical Mechanical Polishing in IC Device LTUE Manufacturing: 196th Meeting of the Electrochemical Society. Consilium. November 1999. FAB300™ Update. LTUE SEMI. 2000. "Provisional Specification for CIM Framework Scheduling Component." San Jose, California. LTUE SEMI E105-1000. Lee, Brian, Duane S. Boning, Winthrop Baylies, Noel Poduje, Pat Hester, Yong Xia, John Valley, Chris Koliopoulus, Dale Hetherington, HongJiang Sun, and Michael Lacy. April 2001. "Wafer Nanotopography Effects on CMP: Experimental Validation of Modeling Methods." San Francisco, California: Materials LTUE Research Society Spring Meeting. NovaScan 2020. February 2002. "Superior Integrated Process Control for Emerging CMP High-End LTUE Applications."

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

/Lynette Umez Eronini/

DATE CONSIDERED

(09/07/2006)

**EXAMINER** 

OF SCIANARK OFFICE

INFORMATION DISCLOSURE CITATION IN AN APPLICATION

(PTO-1449)

ATTY. DOCKET NO.
5918/FPS/MMCS/APC/DV

SERIAL NO.
09/942055CEIVED

SEP 2 0 2002

Technology Center 2100

APPLICANT
SHANMUGASUNDRAM et al.

FILING DATE GROUP August 31, 2001 2122

	<del></del>		J.S. PATENT DOCUMENTS		<del></del>			
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILIN	G DATE	
LTUE	4,698,766	10/06/87	Entwistle et al.	1		05/17	7/85	
LTUE	4,967,381	10/30/90	Lane et al.	<del> </del>		07/00	5/89	
LTUE	5,208,765	05/04/93	Turnbull	<del> </del>		07/20	)/90	
LTUE	5,226,118	07/06/93	Baker et al.			01/29	9/91	
LTUE	5,231,585	07/27/93	Kobayashi et al.			06/20	)/90	
LTUE	5,420,796	05/30/95	Weling et al.		<u> </u>	12/23	3/93	
LTUE	5,469,361	11/21/95	- Moyne			06/06	5/94	
LTUE	5,525,808	06/11/96	Irie et al.	†		12/20	)/94	
LTUE	5,586,039	12/17/96	Hirsch et al.	<u> </u>	1	02/27	7/95	
LTUE	5,603,707	02/18/97	Trombetta et al.	<del></del>	<del> </del>	11/28	3/95	
LTUE	5,664,987	09/09/97	Renteln	1	† <del></del>	09/04	09/04/96	
LTUE	5,812,407	09/22/98	Sato et al.		<u> </u>	08/12	08/12/97	
LTUE	5,828,778	10/27/98	Hagi et al.		<del> </del>	06/12	06/12/96	
LTUE	5,832,224	11/03/98	Fehskens et al.		1	06/14	/96	
		FOR	REIGN PATENT DOCUMENTS	<del>- L</del>	<del>1</del>			
EXAMINER'S INITIALS	PATENT NO. DAT		E COUNTRY	CLASS	SUBCLASS	Translation		
						Yes	No	
LTUE	61-171147	08/01/86	Japan i	<del>                                     </del>	<del>                                     </del>	1	X	
LTUE	6-184434	07/05/94	Japan ,	<del> </del>		<del>                                     </del>	X	
LTUE	0 621 522 A2	10/26/94	Europe 4			X	1	
LTUE	8-50161	02/20/96	Japan •	<del>                                     </del>		<del> </del>	X	
LTUE	8-304023	11/22/96	Japan ,				x	
	OTHE	R ART (Inch	iding Author, Title, Date, Pertinent	Pages, Etc	:.)	<u>.L.</u>		
LTUE			Apparatus of in Situ Measurement and Cameras." IBM Technical Disclosure				ecting	
LTUE		Method to Cha	aracterize the Stability of a Step and R	<del></del>			М	
EXAMINER	/Lyne	tte Umez	DATE CONSIDERED Eronini/ (09/07/2006)	)				

INFORMATION DISCLOSURE CITATION IN AN **APPLICATION** 

ATTY, DOCKET NO. 5918/FPS/MMCS/APC/DV

SERIAL NO. 09/943,955

SHEET 2 OF 4

(PTO-1449)

APPLICANT SHANMUGASUNDRAM et al.

FILING DATE August 31, 2001

GROUP 2122

	7.050.064	04440400	
S	PATENT NO.	DATE	NAME
R'S		T	

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
LTUE	5,859,964	01/12/99	Wang et al.	+		10/25/96
LTUE	5,863,807	01/26/99	Jang et al.	<del> </del>	<del> </del>	03/15/96
LTUE	5,870,306	02/09/99	Harada	<del></del>	<del></del>	06/13/97
LTUE	5,903,455	05/11/99	Sharpe, Jr. et al.	<del></del>		12/12/96
LTUE	5,916,016	06/29/99	Bothra	<del> </del>	<del> </del>	10/23/97
LTUE	5,923,553	07/13/99	Yi	†		10/05/96
LTUE	5,930,138	07/27/99	Lin et al.			09/10/97
LTUE	5,940,300	08/17/99	Ozaki		<del></del>	05/08/97
LTUE	5,960,214	09/28/99	Sharpe, Jr. et al.			12/04/96
LTUE	5,963,881	10/05/99	Kahn et al.		<del></del>	10/20/97
LTUE	5,982,920	11/09/99	Tobin, Jr. et al.			01/08/97
LTUE	6,041,270	03/21/00	Steffan et al.			12/05/97
LTUE	6,078,845	06/20/00	Friedman			11/25/96
LTUE	6,112,130	08/29/00	Fukuda et al.			10/01/97
LTUE	6,148,246	11/14/00	Kawazome			06/10/98
		FOR	REIGN PATENT DOCUMENTS			

**U.S. PATENT DOCUMENTS** 

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
	1			<b>.</b>		Yes	No
LTUE	0 747 795 A2	12/11/96	Europe !			Х	1
LTUE	10-173029	06/26/98	Japan ,				X
LTHE	0 895 145 A1	02/03/99	Europe i			X	
LTUE	11-126816	05/11/99	Japan,				X

### OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

LTUE	Schmid, Hans Albrecht. 1995. "Creating the Architecture of a Manufacturing Framework by Design Patterns." Austin, Texas: OOPSLA.
LTUE	Baliga, John. July 1999. "Advanced Process Control: Soon to be a Must." Cahners Semiconductor International. www.semiconductor.net/semiconductor/issues/issues/1999/jul99/docs/feature1.asp

**EXAMINER** 

/Lynette Umez Eronini/

DATE CONSIDERED (09/07/2006)

SHEET 3 OF 4 ATTY. DOCKET NO. SERIAL NO. 5918/FPS/MMCS/APC/DV 09/943,955 INFORMATION DISCLOSURE RECEIVED CITATION IN AN **APPLICATION** SEP 2 0 2002 (PTO-1449) **Technology Center 2100** APPLICANT SHANMUGASUNDRAM et al. **FILING DATE GROUP** August 31, 2001 2122 U.S. PATENT DOCUMENTS **EXAMINER'S FILING DATE** INITIALS PATENT NO. DATE NAME **CLASS SUBCLASS** 6,175,777 Kim LTUE 01/16/01 01/16/98 6,178,390 01/23/01 Jun 09/08/98 LTUE 6,185,324 02/06/01 LTUE Ishihara et al. 01/31/95 6,192,291 02/20/01 Kwon 10/08/98 LTUE LTUE 6,197,604 03/06/01 Miller et al. 10/01/98 LTUE 6,211,094 04/03/01 Jun et al. 08/23/99 LTUE 6,226,792 05/01/01 Goiffon et al. 10/14/98 LTUE 6,230,069 05/08/01 Campbell et al. 06/26/98 6,236,903 05/22/01 Kim et al. LTUE 09/25/98 LTUE 6,240,330 05/29/01 Kurtzberg et al. 05/28/97 **FOREIGN PATENT DOCUMENTS EXAMINER'S** PATENT NO. DATE COUNTRY **CLASS SUBCLASS** Translation INITIALS Yes 05/21/99 11-135601 LTUE Japan X WO 00/05759 6 02/03/00 wo X LTUE X LTUE WO 00/35063 • | 06/15/00 wo OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) July 5, 2001. "Motorola and Advanced Micro Devices Buy ObjectSpace Catalyst Advanced Process Control Product for Five Wafer Fabs." Semiconductor FABTECH. LTUE www.semiconductorfabtech.com/industry.news/9907/20.07.shtml October 15, 2001. Search Report prepared by the Austrian Patent Office for Singapore Patent Application No. LTUE 200004286-1. Johnson, Bob. June 10, 2002. "Advanced Process Control Key to Moore's Law." Gartner, Inc. LTUE July 9, 2002. International Search Report prepared by the European Patent Office for PCT/US01/24910. LTUE July 29, 2002. International Search Report prepared by the European Patent Office for PCT/US01/27407. LTHE Sonderman, Thomas. 2002. "APC as a Competitive Manufacturing Technology: AMD's Vision for 300mm." LTUE AEC/APC. **EXAMINER** DATE CONSIDERED /Lynette Umez Eronini/ (09/07/2006)

SHEET 4 OF 4 ATTY. DOCKET NO. SERIAL NO. 5918/FPS/MMCS/APC/DV 09/943,955 INFORMATION DISCLOSURE RECEIVED **CITATION IN AN** SEP 2 0 2002 **APPLICATION** (PTO-1449) Technology Center 2100 **APPLICANT** SHANMUGASUNDRAM et al. **FILING DATE GROUP** August 31, 2001 2122 **U.S. PATENT DOCUMENTS EXAMINER'S** FILING DATE INITIALS PATENT NO. DATE **CLASS NAME SUBCLASS** 6,240,331 05/29/01 LTUE Yun 08/18/98 06/19/01 LTUE 6.248,602 Bode et al. 11/01/99 LTUE 6,252,412 06/26/01 Talbot et al. 01/08/99 07/17/01 6,263,255 Tan et al. LTUE 05/18/98 LTUE 6,292,708 09/18/01 Allen et al. 06/11/98 LTUE 6,298,274 10/02/01 Inoue 09/01/99 LTUE 6,303,395 10/16/01 Nulman 06/01/99 LTUE 6,345,315 02/05/02 Mishra 08/12/98 LTUE 6,366,934 04/02/02 Cheng et al. 06/02/99 FOREIGN PATENT DOCUMENTS **EXAMINER'S** PATENT NO. DATE COUNTRY **CLASS SUBCLASS** Translation INITIALS Yes LTUE WO 00/79355 A1 12/28/00 X WO . 03/23/01 LTUE 2001-76982 X Japan . LTUE WO 01/33501 A1 WO > 05/10/01 X OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) **EXAMINER** DATE CONSIDERED /Lynette Umez Eronini/ (09/07/2006)

						SHEET_1_C	OF_1	
IPE	CITATION APPLICA (PTO-1	N IN AN ATION	SURE	APPLICANT SHANMUGASUR	/APC	SERIAL NO. 09/943,955 et al.		
				August 31, 2001		2122		·
			J.S. PATENT DO	OCUMENTS				
EXAMINER'S INITIALS	PATENT NO.	DATE	1	NAME	CLASS	SUBCLASS	FILING	DATE
LTUR	5,655,951	08/12/97	Meikle et al.				09/29/	95
LTUE	5,823,854	10/20/98	Chen				05/28/	96
LTUE	5,859,975	01/12/99	Brewer et al.				08/09/	96
LTUE	6,389,491	05/14/02	Jacobson et al.			D=0-	03/23/	99
						RECE	VE	D
	<del> </del>		<del> </del>		<b></b>	NOV 2	2002	
 	·	····	<del></del>	<del></del>	76		1 -	
						chnology C	nter 2	100
	<u> </u>	FOR	EIGN PATENT	DOCUMENTS	<u> </u>	ł		
EXAMINER'S	PATENT NO.	DATE	<del></del>	UNTRY	CLASS	SUBCLASS		
INITIALS							Trans Yes	lation No
LTUE	2 347 885 A	09/20/00 •	GB				X	
LTUE	WO 01/15865 A1	03/08/014	wo	<del></del>	<del></del> -	<del> </del>	X	<del> </del>
	OTTEN	4.000				Į		
				de, Date, Pertinent				<u>_</u> _
LTUE	00 115 577.9.			e 96(2) EPC for Euro			No.	
LTUE	October 15, 2002. PCT/US02/19062.	International	Search Report pro-	epared by the Europe	ean Patent	Office for		
EXAMINER	/Lyneti	e Umez		ATE CONSIDERED (09/07/2006)				

SHEET 1 OF 2 ATTY, DOCKET NO. SERIAL NO. 005918 09/943,955 INFORMATION DISCLOSURE USA/FPS/MMCS/APC CITATION IN AN DIPE APPLICATION RECEIVED BEC 3 1 2002 (PTO-1449) APPLICANT SHANMUGASUNDRAM BCAROLOGY Center 2100 FILING DATE **GROUP** August 31, 2001 2122 U.S. PATENT DOCUMENTS **EXAMINER'S** PUBLICATION/ FILING DATE INITIALS PATENT NO. DATE NAME CLASS **SUBCLASS** 5,270,222 12/14/93 Moslehi LTUE 12/31/90 LTUE 5,375,064 12/20/94 Bollinger 12/02/93 02/04/97 LTUE 5,599,423 Parker et al. 06/30/95 5,844,554 12/01/98 Geller et al. LTUE 09/17/96 FOREIGN PATENT DOCUMENTS **EXAMINER'S** PUBLICATION / DATE COUNTRY CLASS **SUBCLASS** INITIALS Translation PATENT NO. LTUE **WO 95/34866** 12/21/95 WO X LTUE **WO 98/45090** 10/15/98 WO X LTUE 12/02/98 EP 0 881 040 A2 Europe X LTUE WO 99/25520 05/27/99 WO X LTUE WO 00/54325 09/14/00 WO X LTUE EP 1 066 925 A2 01/10/01 Europe X LTUE 04/18/01 EP 1 092 505 A2 Europe X OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Hu, Albert, Kevin Nguyen, Steve Wong, Xiuhua Zhang, Emanuel Sachs, and Peter Renteln. 1993. "Concurrent Deployment of Run by Run Controller Using SCC Framework." IEEE/SEMI International LTUE Semiconductor Manufacturing Science Symposium. pp. 126-132. Hu, Albert, He Du, Steve Wong, Peter Renteln, and Emanuel Sachs. 1994. "Application of Run by Run Controller to the Chemical-Mechanical Planarization Process." IEEE/CPMT International Electronics LTUE Manufacturing Technology Symposium. pp. 371-378. Smith, Taber, Duane Boning, James Moyne, Arnon Hurwitz, and John Curry. June 1996. "Compensating for CMP Pad Wear Using Run by Run Feedback Control." Proceedings of the Thirteenth International LTUE VLSI Multilevel Interconnection Conference. pp. 437-439. Suzuki, Junichi and Yoshikazu Yamamoto. 1998. "Toward the Interoperable Software Design Models: Quartet of UML, XML, DOM and CORBA." Proceedings IEEE International Software Engineering LTUE Standards Symposium. pp. 1-10. Klein, Bruce. June 1999. "Application Development: XML Makes Object Models More Useful."

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

/Lynette Umez Eronini/| (09/07/2006)

**DATE CONSIDERED** 

Informationweek. pp. 1A-6A.

LTUE

**EXAMINER** 

SHEET 2 OF 2

ATTY, DOCKET NO. SERIAL NO. 09/943.955 005918 INFORMATION DISCLOSURE USA/FPS/MMCS/APC RECEIVED SIPE CITATION IN AN **APPLICATION** JAN 0 2 2003 BEC 3 1 2882 Technology Center 2100 (PTO-1449) **CAPPLICANT** SHANMUGASUNDRAM et al. **FILING DATE GROUP** August 31, 2001 2122 US PATENT DOCUMENTS PUBLICATION / **EXAMINER'S** FILING DATE **CLASS** INITIALS PATENT NO. DATE NAME **SUBCLASS** 5,889,991 03/30/99 Consolatti et al. 12/06/96 LTUE 02/06/01 6,183,345 B1 Kamono et al. 03/20/98 LTUE 6,253,366 B1 06/26/01 Mutschler, III 03/31/99 LTUE 6,298,470 B1 10/02/01 Breiner et al. 04/15/99 LTUE FOREIGN PATENT DOCUMENTS **EXAMINER'S** PUBLICATION / DATE COUNTRY **SUBCLASS** CLASS TENSERGO INTITIALS PATENT NO. Yes WO WO 01/52055 A3 07/19/01 X LTUE X WO 01/57823 A2 08/09/01 WO LTHE X 02/27/02 EP 1 182 526 A2 Europe LTHE WO 02/17150 A1 02/28/02 WO X LTUE WO 02/33737 A2 04/25/02 X WO LTUE OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Chemali, Chadi El, James Moyne, Kareemullah Khan, Rock Nadeau, Paul Smith, John Colt, Jonathan Chapple-Sokol, and Tarun Parikh. July/August 2000. "Multizone Uniformity Control of a Chemical Mechanical Polishing Process Utilizing a Pre- and Postmeasurement Strategy." J. Vac. Sci. Technol. A. LTUE Vol. 18(4). pp. 1287-1296. American Vacuum Society. Jensen, Alan, Peter Renteln, Stephen Jew, Chris Raeder, and Patrick Cheung. June 2001. "Empirical-Based Modeling for Control of CMP Removal Uniformity." Solid State Technology, Vol. 44, No. 6, pp. 101-102, LTUE 104, 106. Cowan Publ. Corp.: Washington, D.C. Sarfaty, Moshe, Arulkumar Shanmugasundram, Alexander Schwarm, Joseph Paik, Jimin Zhang, Rong Pan, Martin J. Seamons, Howard Li, Raymond Hung, and Suketu Parikh. April/May 2002. "Advance Process Control Solutions for Semiconductor Manufacturing." IEEE/SEMI Advanced Semiconductor LTUE Manufacturing Conference. pp. 101-106. October 4, 2002. International Search Report from PCT/US01/22833. LTUE October 23, 2002. International Search Report from PCT/US01/27406. LTUE LTUE November 7, 2002. International Search Report from PCT/US02/19061. November 11, 2002. International Search Report from PCT/US02/19117. LTUE November 12, 2002. International Search Report from PCT/US02/19063. LTUE DATE CONSIDERED **EXAMINER** /Lynette Umez Eronini/ (09/07/2006)

SHEET 1 OF 11

INFORMATION DISCLOSURE CITATION IN AN APPLICATION. (PTO-1449)

ATTY. DOCKET NO. 005918 USA/FPS/MMCS/APC

SERIAL NO. 09/943,955

APPLICANT SHANMUGASUNDRAM et al.

FILING DATE August 31, 2001 2122

			IS PATENT DOCUME	NTS		馬馬馬爾	
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME		CLASS	SUBCLASS	FILING DATE
LTUE	3,205,485	09/07/65	Noltingk	7	・ロン		10/21/60
LTUE	3,229,198	01/11/66	Libby	HE	ا اساع		09/28/62
LTUE	4,000,458	12/28/76	Miller et al.	AP	R 2 8 20	03	08/21/75
LTUE	4,302,721	11/24/81	Urbanek et al.				05/15/79
LTUE	4,750,141	06/07/88	Judell et al.	Techno	ogy Cent	CI PIO	11/26/85
LTUE	4,757,259	07/12/88	Charpentier				11/05/86
LTUE	4,938,600	07/03/90	Into				02/09/89
LTUE	5,283,141	02/01/94	Yoon et al.				03/05/92
LTUE	5,338,630	08/16/94	Yoon et al.				11/18/93
LTUE	5,485,082	01/16/96	Wisspeintner et al.				04/05/90
LTUE	5,497,381	03/05/96	O'Donoghue et al.				06/01/95
LTUE	5,511,005	04/23/96	Abbe et al.				02/16/94
LTUE	5,519,605	05/21/96	Cawlfield				10/24/94
LTUE	5,526,293	06/11/96	Mozumder et al.				12/17/93
LTUE	5,541,510	06/30/96	Danielson				04/06/95
LTUE	5,546,312	08/13/96	Mozumder et al.				02/24/94
LTUE	5,553,195	09/03/96	Meijer	·			09/29/94
LTUE	5,602,492	02/11/97	Cresswell et al.				04/28/94
LTUE	5,617,023	04/01/97	Skalski				02/02/95
LTUE	5,627,083	05/06/97	Tounai				05/12/95
LTUE	5,642,296	06/24/97	Saxena	<del></del>			07/29/93
LTUE	5,646,870	07/08/97	Krivokapic et al.				02/13/95
LTUE	5,649,169	07/15/97	Berezin et al.				06/20/95
LTUE	5,654,903	08/05/97	Reitman et al.				11/07/95
LTUE	5,663,797	09/02/97	Sandhu				05/16/96
LTUE	5,665,199	09/09/97	Sahota et al.				06/23/95
LTUE	5,666,297	09/09/97	Britt et al.				05/13/94

**EXAMINER** 

DATE CONSIDERED

SHEET 2 OF 11

# INFORMATION DISCLOSURE CITATION IN AN

**APPLICATION** (PTO-1449)

ATTY. DOCKET NO. 005918 USA/FPS/MMCS/APC SERIAL NO. 09/943,955

GA OUR 2 4 7003 KEY APPLICANT SHANMUGASUNDRAM et al.

FILING DATE August 31, 2001

	GROUP
į	2122

			US PATENT DOCUM	MNID			
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME		CLASS	SUBCLASS	FILING
LTUE	5,667,424	09/16/97	Pan	DEC	EIVE	<b>-</b> D	09/25/96
LTUE	5,674,787	10/07/97	Zhao et al.	TIE	1 Same 5 15 150		01/16/96
LTUE	5,719,796	02/17/98	Chen	APF	2 8 200	3	12/04/95
LTUE	5,735,055	04/07/98	Hochbein et al.		Conto	2100	04/23/96
LTUE	5,761,064	06/02/98	La et al.	Technolo	gy <del>Cente</del>	r 2100	10/06/95
LTUE	5,777,901	07/07/98	Berezin et al.			<del></del>	09/29/95
LTUE	5,787,021	07/28/98	Samaha				12/18/95
LTUE	5,787,269	07/28/98	Hyodo	<del></del>		<del></del>	09/19/95
LTUE	5,825,913	10/20/98	Rostami et al.		<u> </u>		07/18/95
LTUE	5,857,258	01/12/99	Penzes et al.	<del></del>			05/12/94
LTUE	5,910,846	06/08/99	Sandhu	T			08/19/97
GTUE	5,943,237	08/24/99	Van Boxem				10/17/97
LTUE	5,960,185	09/28/99	Nguyen				06/24/96
LTUE	5,961,369	10/05/99	Bartels et al.				06/04/98
LTUE	5,978,751	11/02/99	Pence et al.				02/25/97
LTUE	6,017,771	01/25/00	Yang et al.				04/27/98
LTUE	6,036,349	03/14/00	Gombar				07/26/96
LTUE	6,064,759	05/16/00	Buckley et al.				11/06/97
LTUE	6,072,313	06/06/00	Li et al.	<u> </u>			06/17/97
LTUE	6,097,887	08/01/00	Hardikar et al.				10/27/97
LTUE	6,108,092	08/22/00	Sandhu		}		06/08/99
LTUE	6,127,263	10/03/00	Parikh				07/10/98
LTUE	6,136,163	10/24/00	Cheung et al.	<del> </del>		<del></del>	03/05/99
LTIIR	6,141,660	10/31/00	Bach et al.			<del></del>	07/16/98
LTUE	6,143,646	11/07/00	Wetzel				06/03/97
LTUE	6,148,099	11/14/00	Lee et al.				07/03/97
LTUE	6,148,239	11/14/00	Funk et al.	<del></del>			12/12/97

**EXAMINER** 

/Lynette Umez Eronini/

DATE CONSIDERED (09/07/2006)

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line to the bitation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

4

4

109/07/2006)

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line to the bitation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

SHEET 3 OF 11 SERIAL NO. ATTY. DOCKET NO. 005918 09/943,955 USA/FPS/MMCS/APC PROUBLE CEIVE

INFORMATION DISCLOSURE CITATION IN AN **APPLICATION** (PTO-1449)

APPLICANT SHANMUGASUNDRAM et al.

FILING DATE August 31, 2001

GROUP 2122

		U	S. PATENT DOCUMENTS				
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
LTUE	6,159,075	12/12/00	Zhang			10/13/99	
LTUE	6,159,644	12/12/00	Satoh et al.	FIVE	D	03/06/96	
LTUE	6,161,054	12/12/00	Rosenthal et al.			09/17/98	
LTUE	6,169,931	01/02/01	Runnels APR	<del>2 8 2003</del>		06/29/98	
LTUE	6,172,756	01/09/01	Chalmers et al. Technolog	v Center	2100	12/11/98	
LTUE	6,173,240	01/09/01	Sepulveda et al.	l Collins		11/02/98	
LTUE	6,191,864	02/20/01	Sandhu			02/29/00	
LTUE	6,204,165	03/20/01	Ghoshal			06/24/99	
LTUE	6,210,983	04/03/01	Atchison et al.		<del></del>	06/15/99	
LTUE	6,214,734	04/10/01	Bothra et al.			11/20/98	
LTUE	6,217,412	04/17/01	Campbell et al.			08/11/99	
LTUE	6,222,936	04/24/01	Phan et al.			09/13/99	
LTUE	2001/0001755	05/24/01	Sandhu et al.			12/29/00	
LTUE	2001/0003084	06/07/01	Finarov			12/04/00	
LTUE	6,246,972	06/12/01	Klimasauskas			05/27/99	
LTUE	6,276,989	08/21/01	Campbell et al.			08/11/99	
LTUE	6,280,289	08/28/01	Wiswesser et al.			11/02/98	
LTUE	6,284,622	09/04/01	Campbell et al.			10/25/99	
LTUE	6,287,879	09/11/01	Gonzales et al.		<del></del>	08/11/99	
LTUE	6,290,572	09/18/01	Hofmann			03/23/00	
LTUE	6,304,999	10/16/01	Toprac et al.			10/23/00	
LTUE	2001/0030366	10/18/01	Nakano et al:			03/07/01	
LTUE	6,307,628	10/23/01	Lu et al.			08/18/00	
LTUE	6,314,379	11/06/01	Hu et al.			12/04/97	
LTUE	2001/0039462	11/08/01	Mendez et al.			04/02/01	
LTUE	6,320,655	11/20/01	Matsushita et al.			03/15/00	
EXAMINER	/Lynette Umez Eronini/ (09/07/2006)						

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through situation if he is conformance and not considered. Include copy of this form with next communication to Applicant.

70F 3 0 5003

BECEINED

# INFORMATION DISCLOSURE CITATION IN AN **APPLICATION** (PTO-1449)

ATTY. DOCKET NO. 005918 USA/FPS/MMCS/APC SERIAL NO.

**EXAMINER** 

APPLICANT SHANMUGASUNDRAM et al.

**FILING DATE** August 31, 2001 **GROUP** 2122

			S: PATENT DOCUMENTS			
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
LTUE	2001/0042690	11/22/01	Talieh			12/14/00
LTUE	6,324,481	11/27/01	Atchison et al.	SENE		06/15/99
LTUE	6,334,807	01/01/02	Lebel et al.			04/30/99
TUE	6,336,841	01/08/02	Chang	R 2 8 2003		03/29/01
LTUE	2002/0032499	03/14/02				05/04/01
LTUE	6,360,133	03/19/02	Campbell et al. Techno	logy Center	2100	06/17/99
LTUE	6,360,184	03/19/02	Jacquez			03/26/97
LTUE	6,368,883	04/09/02	Bode et al.			08/10/99
LTUE	6,368,884	04/09/02	Goodwin et al.			04/13/00
LTUE	6,379,980	04/30/02	Toprac			07/26/00
LTUE	6,388,253	05/14/02	Su			11/02/00
LTUE	2002/0058460	05/16/02	Lee et al.			09/14/01
LTUE	6,395,152	05/28/02	Wang			07/02/99
LTUE	6,397,114	05/28/02	Eryurek et al.			05/03/99
LTUE	6,405,096	06/11/02	Toprac et al.			08/10/99
LTUE	6,405,144	06/11/02	Toprac et al.			01/18/00
LTUE	2002/0070126	06/13/02	Sato et al.			09/19/01
LTUE	2002/0081951	06/27/02	Boyd et al.			02/20/02
LTUE	2002/0089676	07/11/02	Pecen et al.			04/26/00
LTUE	2002/0102853	08/01/02	Li et al.			12/20/01
LTUE	2002/0107599	08/08/02	Patel et al.			01/25/01
LTUE	6,435,952	08/20/02	Boyd et al.			06/30/00
LTUE	6,438,438	08/20/02	Takagi et al.			01/02/98
LTUE	2002/0113039	08/22/02	Mok et al.			02/16/01
LTUE	6,440,295	08/27/02	Wang			02/04/00
LTUE	2002/0127950	09/12/02	Hirose et al.			03/08/01
LTUE	6,455,937	09/24/02	Cunningham			03/17/99

/Lynette Umez Eronini/ (09/07/2006)

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through trainer if not in conformance and not considered. Include copy of this form with next communication to Applicant.

6

6

1010344

DATE CONSIDERED

SHEET <u>5</u> OF <u>11</u>

# INFORMATION DISCLOSURE CITATION IN AN **APPLICATION** (PTO-1449)

ATTY. DOCKET NO. 005918 USA/FPS/MMCS/APC

SERIAL NO. GROUP ROLL TOO 09/943,955

**APPLICANT** SHANMUGASUNDRAM et al.

**FILING DATE** August 31, 2001 GROUP 2122

		U	S. PATENT DOCUMEN	TS.				
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME		CLASS	SUBCLASS		ng Te
LTUE	2002/0149359	10/17/02	Crouzen et al.				08/18	/01
LTUE	6,479,902	11/12/02	Lopatin et al.	DE	CEIV	ED	06/29	<b>/00</b>
LTUE	6,479,990	11/12/02	Mednikov et al.		The state of the s		06/18	<del>/01</del>
LTUE	2002/0185658	12/12/02	Inoue et al.	AF	R 282	303	06/14	<b>/01</b>
LTUE	2002/0193902	12/19/02	Shanmugasundram et al.	_	La gui Cor	ter 2100	06/18	/02
LTUE	2002/0197745	12/26/02	Shanmugasundram et al.	Techno	HOGY CE		08/31	/01
LTUE	2002/0197934	12/26/02	Paik			· · · · · · · - · · · · · · · ·	11/30	/01
LTUE	2002/0199082	12/26/02	Shanmugasundram et al.				06/18	/02
LTUE	6,503,839	01/07/03	Gonzales et al.				07/03	<del>/01</del>
LTUE	2003/0020909	01/30/03	Adams et al.				04/09	/01
LTUE	2003/0020928	01/30/03	Ritzdorf et al.				07/09	/01
	6,517,413	02/11/03	Hu et al.				10/25	/00
		EOR	EICENPATIENTEDOCUM	ENIS				
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY		CLASS	SUBCLASS	Trans	lation No
					L		1	
LTUE	61-66104	04/04/86	Japan				X	ł
	61-66104 3-202710	04/04/86	Japan Japan				X	
LTUE			<del></del>					-
LTUE LTUE	3-202710	09/04/91	Japan				X	
LTUE LTUE LTUE	3-202710 8-23166	09/04/91 01/23/96	Japan Japan				x x	
LTUE LTUE LTUE LTUE	3-202710 8-23166 9-246547	09/04/91 01/23/96 09/19/97	Japan Japan Japan				X X X	
LTUE LTUE LTUE LTUE LTUE LTUE	3-202710 8-23166 9-246547 WO 98/05066	09/04/91 01/23/96 09/19/97 02/05/98	Japan Japan Japan WIPO				X X X	
LTUE LTUE LTUE LTUE LTUE	3-202710 8-23166 9-246547 WO 98/05066 10-34522	09/04/91 01/23/96 09/19/97 02/05/98 02/10/98	Japan Japan Japan WIPO Japan				X X X X	
LTUE LTUE LTUE LTUE LTUE LTUE	3-202710 8-23166 9-246547 WO 98/05066 10-34522 0 869 652	09/04/91 01/23/96 09/19/97 02/05/98 02/10/98 10/07/98	Japan Japan Japan WIPO Japan Europe				X X X X	
LTUE LTUE LTUE LTUE	3-202710 8-23166 9-246547 WO 98/05066 10-34522 0 869 652 WO 99/09371	09/04/91 01/23/96 09/19/97 02/05/98 02/10/98 10/07/98 02/25/99	Japan Japan Japan WIPO Japan Europe WIPO				X X X X X	
LTUE LTUE LTUE LTUE LTUE LTUE LTUE	3-202710 8-23166 9-246547 WO 98/05066 10-34522 0 869 652 WO 99/09371 0 910 123	09/04/91 01/23/96 09/19/97 02/05/98 02/10/98 10/07/98 02/25/99 04/21/99	Japan Japan Japan WIPO Japan Europe WIPO Europe				X X X X X X	

# INFORMATION DISCLOSURE CITATION IN AN **APPLICATION**

ATTY, DOCKET NO. 005918 USA/FPS/MMCS/APC SERIAL NO.

09/943,955

GROUP 2 2003

EX

(PTO-1449)

APPLICANT SHANMUGASUNDRAM et al.

FILING DATE August 31, 2001 GROUP · 2122

		FOR	EIGN PATENT DOCUMENTS				
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Trans	lation No
LTUE	1 071 128	01/24/01	Europe	F 9	- poor []	X	
TUE	WO 01/18623	03/15/01	WIPO RE	CEIV		X	
TUE	WO 01/25865	04/12/01	WIPO	DR 2 8 7	กกา	X	
TUE	434103	05/16/01	Taiwan	1		X	
LTUE	436383	05/28/01	Taiwan Techn	ology Cer	ter 2100	X	
LTUE	455938	09/21/01	Taiwan			X	
LTUE	455976	09/21/01	Taiwan			X	
LTUE	2001-284299	10/12/01	Japan			X	
LTUE	2001-305108	10/31/01	Japan -			X	
LTUE	2002-9030	01/11/02	Japan			X	
LTUE	WO 02/074491	09/26/02	WIPO			X	
TUE	2002-343754	11/29/02	Japan			Х	
	OTH	ERART (Inclu	ding Author, Title, Date, Pertiner	it Pages, E	L 2)		
LTUE	Ostanin, Yu.Ya.	October 1981. with Laid-on Ed	"Optimization of Thickness Inspec dy-Current Transducers (Abstract)."	tion of Elec	trically Conduct	tive Sin	gle-
TUE	February 1984.	"Substrate Screen	ening Process." IBM Technical Dis	closure Bull	letin, pp. 4824-4	1825.	
LTUE	•	-	ture Errors and Ways of Elimination thes Messen <sup>TM</sup> , vol. 55, no. 1, pp. 2			ent of S	haft
LTUE			panos. November 1990. "Statistica for LPCVD." <i>IEEE Transactions of</i>				/. 3, ı
LTUE	Evidence Integra n. 1, pp. 43-51.	ation: An LPCV	Spanos. February 1991. "Continu D Application." <i>IEEE Transactions</i>	s on Semico	nductor Manufa	cturing	 γ, ν. ·
TUE			ne Intelligent Microelectronics Factor onductor Manufacturing Science Sy				CA.
TUE	Burke, Peter A.	June 1991. "Se	mi-Empirical Modelling of SiO2 Cl ce, 1991 IEEE, pp. 379-384. IEEE.	nemical-Me			
			•				

## ATTY. DOCKET NO. SERIAL NO. USA/FPS/MMONCE/VED 09/943,955 INFORMATION DISCLOSURE CITATION IN AN APPLICATION APR 2 8 2003 (PTO-1449) APPLICANT Technology Center 2100 SHANMUGASUNDRAM et al. **FILING DATE GROUP** August 31, 2001 2122 OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) May 1992 "I ager Ablation Endnoint Detector" IRM Technical Disclosure Bullatin pp. 232-234

LTUE	May 1992. "Laser Ablation Endpoint Detector." IBM Technical Disclosure Bulletin, pp. 333-334.
LTUE	Spanos, Costas J., Hai-Fang Guo, Alan Miller, and Joanne Levine-Parrill. November 1992. "Real-Time Statistical Process Control Using Tool Data." <i>IEEE Transactions on Semiconductor Manufacturing</i> , v. 5, n. 4, pp. 308-318.
LTUE	February 1993. "Electroless Plating Scheme to Hermetically Seal Copper Features." IBM Technical Disclosure Bulletin, pp. 405-406.
LTUE	Scarr, J. M. and J. K. Zelisse. April 1993. "New Topology for Thickness Monitoring Eddy Current Sensors (Abstract)." Proceedings of the 36th Annual Technical Conference, Dallas, Texas.
LTUE	Matsuyama, Akira and Jessi Niou. 1993. "A State-of-the-Art Automation System of an ASIC Wafer Fab in Japan." IEEE/SEMI International Semiconductor Manufacturing Science Syposium, pp. 42-47.
LTUE	Yeh, C. Eugene, John C. Cheng, and Kwan Wong. 1993. "Implementation Challenges of a Feedback Control System for Wafer Fabrication." <i>IEEE/CHMT International Electronics Manufacturing Technology Symposium</i> , pp. 438-442.
LTUE	Kurtzberg, Jerome M. and Menachem Levanoni. January 1994. "ABC: A Better Control for Manufacturing." IBM Journal of Research and Development, v. 38, n. 1, pp. 11-30.
LTUE	Mozumder, Purnendu K. and Gabriel G. Barna. February 1994. "Statistical Feedback Control of a Plasma Etch Process." IEEE Transactions on Semiconductor Manufacturing, v. 7, n. 1, pp. 1-11.
LTUE	Muller-Heinzerling, Thomas, Ulrich Neu, Hans Georg Nurnberg, and Wolfgang May. March 1994. "Recipe-Controlled Operation of Batch Processes with Batch X." ATP Automatisierungstechnische Praxis, vol. 36, no. 3, pp. 43-51.
LTUE	Stoddard, K., P. Crouch, M. Kozicki, and K. Tsakalis. June-July 1994. "Application of Feedforward and Adaptive Feedback Control to Semiconductor Device Manufacturing (Abstract)." Proceedings of 1994 American Control Conference – ACC '94, vol. 1, pp. 892-896. Baltimore, Maryland.
LTUE	Schaper, C. D., M. M. Moslehi, K. C. Saraswat, and T. Kailath. November 1994. "Modeling, Identification, and Control of Rapid Thermal Processing Systems (Abstract)." Journal of the Electrochemical Society, vol. 141, no. 11, pp. 3200-3209.
LTUE	Tao, K. M., R. L. Kosut, M. Ekblad, and G. Aral. December 1994. "Feedforward Learning Applied to RTP of Semiconductor Wafers (Abstract)." Proceedings of the 33 <sup>rd</sup> IEEE Conference on Decision and Control, vol. 1, pp. 67-72. Lake Buena Vista, Florida.
LTUE	Hu, Albert, He Du, Steve Wong, Peter Renteln, and Emmanuel Sachs. 1994. "Application of Run by Run Controller to the Chemical-Mechanical Planarization Process." IEEE/CPMT International Electronics Manufacturing Technology Symposium, pp. 371-378.
LTUE	Spanos, C. J., S. Leang, SY. Ma, J. Thomson, B. Bombay, and X. Niu. May 1995. "A Multistep Supervisory Controller for Photolithographic Operations (Abstract)." Proceedings of the Symposium on Process Control, Diagnostics, and Modeling in Semiconductor Manufacturing, pp. 3-17.
LTUE	Leang, Sovarong, Shang-Yi Ma, John Thomson, Bart John Bombay, and Costas J. Spanos. May 1996. "A Control System for Photolithographic Sequences." <i>IEEE Transactions on Semiconductor Manufacturing</i> , vol. 9, no. 2.
,	

/Lynette Umez Eronini/ (09/07/2006)

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw indebtrough citation with in conformance and not considered. Include copy of this form with next communication to Applicant.

**EXAMINER** 

DATE CONSIDERED

SHEET <u>8</u> OF 11 ATTY. DOCKET NO. SERIAL NO. 09/943,955 005918 GROUP 2 2003 INFORMATION DISCLOSURE RECEIVED CITATION IN AN **APPLICATION** APR 2 8 2003 (PTO-1449) SHADMUGASUNDRAM et al. **FILING DATE GROUP** TENT & TRADE August 31, 2001 2122 OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Boning, Duane S., William P. Moyne, Taber H. Smith, James Moyne, Ronald Telfeyan, Arnon Hurwitz, Scott Shellman, and John Taylor. October 1996. "Run by Run Control of Chemical-Mechanical Polishing." LTUE IEEE Transactions on Components, Packaging, and Manufacturing Technology—Part C, vol. 19, no. 4, pp. 307-314. Zhe, Ning, J. R. Moyne, T. Smith, D. Boning, E. Del Castillo, Yeh Jinn-Yi, and Hurwitz. November 1996. "A Comparative Analysis of Run-to-Run Control Algorithms in Semiconductor Manufacturing Industry LTUE (Abstract)." IEEE/SEMI 1996 Advanced Semiconductor Manufacturing Conference Workshop, pp. 375-381. Yasuda, M., T. Osaka, and M. Ikeda. December 1996. "Feedforward Control of a Vibration Isolation System for Disturbance Suppression (Abstract)." Proceeding of the 35th IEEE Conference on Decision and LTUE Control, vol. 2, pp. 1229-1233. Kobe, Japan. Fan, Jr-Min, Ruey-Shan Guo, Shi-Chung Chang, and Kian-Huei Lee. 1996. "Abnormal Tred Detection of Sequence-Disordered Data Using EWMA Method." IEEE/SEMI Advanced Semiconductor Manufacturing LTUE Conference, pp. 169-174. Smith, Taber and Duane Boning. 1996. "A Self-Tuning EWMA Controller Utilizing Artificial Neural Network Function Approximation Techniques." IEEE/CPMT International Electronics Manufacturing LTUE Technology Symposium, pp. 355-363. Guo, Ruey-Shan, Li-Shia Huang, Argon Chen, and Jin-Jung Chen. October 1997. "A Cost-Effective Methodology for a Run-by-Run EWMA Controller." 6th International Symposium on Semiconductor LTUE Manufacturing, pp. 61-64. Mullins, J. A., W. J. Campbell, and A. D. Stock. October 1997. "An Evaluation of Model Predictive Control in Run-to-Run Processing in Semiconductor Manufacturing (Abstract)." Proceedings of the SPIE -LTUE The International Society for Optical Engineering Conference, vol. 3213, pp. 182-189. Reitman, E. A., D. J. Friedman, and E. R. Lory. November 1997. "Pre-Production Results Demonstrating LTUE Multiple-System Models for Yield Analysis (Abstract)." IEEE Transactions on Semiconductor Manufacturing, vol. 10, no. 4, pp. 469-481. Durham, Jim and Myriam Roussel. 1997. "A Statistical Method for Correlating In-Line Defectivity to LTUE Probe Yield." IEEE/SEMI Advanced Semiconductor Manufacturing Conference, pp. 76-77. Shindo, Wataru, Eric H. Wang, Ram Akella, and Andrzej J. Strojwas. 1997. "Excursion Detection and LTUE Source Isolation in Defect Inspection and Classification." 2nd International Workshop on Statistical COUL DE LTUE Metrology, pp. 90-93. July 1998. "Active Controller: Utilizing Active Databases for Implementing Multistep Control of Semiconductor Manufacturing (Abstract)." IEEE Transactions on Components, Packaging and Manufacturing Technology-Part C, vol. 21, no. 3, pp. 217-224. Fang, S. J., A. Barda, T. Janecko, W. Little, D. Outley, G. Hempel, S. Joshi, B. Morrison, G. B. Shinn, and M. Birang. 1998. "Control of Dielectric Chemical Mechanical Polishing (CMP) Using and Interferometry Based Endpoint Sensor." International Proceedings of the IEEE Interconnect Technology Conference, pp.

> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

/Lynette Umez Eronini/

*76-78*.

DATE CONSIDERED

(09/07/2006)

SHEET 9 OF 11

		المستوال المستوالي ا						
		OTTY, DOCKET NO.	SERIAL NO. 09/943,955					
INF	ORMATION DISCLOSURE	USAMP SAMMCS/APC	ECEIVED					
IPE	CITATION IN AN GAO	* 200° CD	1 .					
101, 6	APPLICATION (PTO-1449)	7>0	APR 2 8 2003					
APR 2 5 2003	S A S A S A S A S A S A S A S A S A S A	APPLICANT 60 SHANMUGASUNDRAM et	hnology Center 2100					
TRADEMAR	To the second se	FILING DATE August 31, 2001	GROUP 2122					
	OTHER ART (Including Author, I	itle, Date, Pertinent Pages, Etc						
LTUE	Ouma, Dennis, Duane Boning, James Chung, Gr Integrated Characterization and Modeling Methor the IEEE 1998 International Interconnect Technology	odology for CMP Dielectric Plans nology Conference, pp. 67-69.	arization." Proceedings of					
LTUE	Boning, Duane S., Jerry Stefani, and Stephanie Semiconductor Manufacturing." Encyclopedia	•						
LTUE	McIntosh, John. March 1999. "Using CD-SEM (Abstract)." JOM, vol. 51, no. 3, pp. 38-39.							
LTUE	Pan, J. Tony, Ping Li, Kapila Wijekoon, Stan Tsai, and Fritz Redeker. May 1999. "Copper CMP Integration and Time Dependent Pattern Effect." IEEE 1999 International Interconnect Technology Conference, pp. 164-166.							
LTUE	Meckl, P. H. and K. Umemoto. August 1999. "Achieving Fast Motions in Semiconductor Manufacturing Machinery (Abstract)." Proceedings of the 1999 IEEE International Conference on Control Applications, vol. 1, pp. 725-729. Kohala Coast, HI.							
LTUE	Khan, K., C. El Chemali, J. Moyne, J. Chapple-1999. "Yield Improvement at the Contact Proce IEEE/CPMT Electronics Manufacturing Technology."	ess Through Run-to-Run Control (	•					
LTUE	Ruegsegger, Steven, Aaron Wagner, James S. Fr "Feedforward Control for Reduced Run-to-Run Transactions on Semiconductor Manufacturing,	reudenberg, and Dennis S. Grima Variation in Microelectronics Ma						
LTUE	November 1999. "How to Use EWMA to Achie NDT Contribution to the Infrastructure Safety Sentence of the Sentenc	eve SPC and EPC Control." Interpretation of the series of	national Symposium on					
LTUE	Edgar, T. F., W. J. Campbell, and C. Bode. Dec Manufacturing." Proceedings of the 38 <sup>th</sup> IEEE 6 4, pp. 4185-4191.	cember 1999. "Model-Based Con	trol in Microelectronics trol, Phoenix, Arizona, vol.					
LTUE	Meckl, P. H. and K. Umemoto. April 2000. "A [Semiconductor Manufacturing Machine] (Abstr 232-237.							
LTUE	Oechsner, R., T. Tschaftary, S. Sommer, L. Pfitz September 2000. "Feed-forward Control for a L SPIE - The International Society for Optical En	ithography/Etch Sequence (Abstr	act)." Proceedings of the					
LTUE	Cheung, Robin. October 18, 2000. "Copper Int Santa Clara, CA.							
LTUE	Edgar, Thomas F., Stephanie W. Butler, W. Jarr Hwang, K. S. Balakrishnan, and J. Hahn. Nover Manufacturing: Practices, Challenges, and Possi	mber 2000. "Automatic Control i	n Microelectronics					
EXAMINER		DATE CONSIDERED						

SHEET 10 OF 11 ATTY. DO. 005918

OD. 2003

APPLICANT

OTHER MUGASUNI SERIAL NO. 09/943,955 INFORMATION DISCLOSURE RECEIVED CITATION IN AN APPLICATION APR 2 8 2003 (PTO-1449) SHAMPHUGASUNDRAM et al. **FILING DATE GROUP** August 31, 2001 2122 OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Khan, S., M. Musavi, and H. Ressom. November 2000. "Critical Dimension Control in Semiconductor Manufacturing (Abstract)." ANNIE 2000. Smart Engineering Systems Design Conference, pp. 995-1000. LTUE St. Louis, Missouri. ACM Research Inc. 2000. "Advanced Copper Metallization for 0.13 to 0.05 µm & Beyond." LTUE <a href="http://acmrc.com/press/ACM-ECP-brochure.pdf">http://acmrc.com/press/ACM-ECP-brochure.pdf</a> Ravid, Avi, Avner Sharon, Amit Weingarten, Vladimir Machavariani, and David Scheiner. 2000. "Copper CMP Planarity Control Using ITM." IEEE/SEMI Advanced Semiconductor Manufacturing Conference, pp. LTUE 437-443. Chen, Argon and Ruey-Shan Guo. February 2001. "Age-Based Double EWMA Controller and Its Application to CMP Processes." IEEE Transactions on Semiconductor Manufacturing, vol. 14, no. 1, pp. LTUE 11-19. Tobin, K. W., T. P. Karnowski, L. F. Arrowood, and F. Lakhani. April 2001. "Field Test Results of an LTUE Automated Image Retrieval System (Abstract)." Advanced Semiconductor Manufacturing Conference, 2001 IEEE/SEMI, Munich, Germany. Tan, K. K., H. F. Dou, and K. Z. Tang. May-June 2001. "Precision Motion Control System for Ultra-Precision Semiconductor and Electronic Components Manufacturing (Abstract)." 51" Electronic LTUE Components and Technology Conference 2001. Proceedings, pp. 1372-1379. Orlando, Florida. Heuberger, U. September 2001. "Coating Thickness Measurement with Dual-Function Eddy-Current & LTUE Magnetic Inductance Instrument (Abstract)." Galvanotechnik, vol. 92, no. 9, pp. 2354-2366+IV. Wang, LiRen and Hefin Rowlands. 2001. "A Novel NN-Fuzzy-SPC Feedback Control System." 8th IEEE LTUE International Conference on Emerging Technologies and Factory Automation, pp. 417-423. Moyne, J., V. Solakhian, A. Yershov, M. Anderson, and D. Mockler-Hebert. April-May 2002. "Development and Deployment of a Multi-Component Advanced Process Control System for an Epitaxy LTUE Tool (Abstract)." 2002 IEEE Advanced Semiconductor Manufacturing Conference and Workshop, pp. 125-130. Sarfaty, M., A. Shanmugasundram, A. Schwarm, J. Paik, Jimin Zhang, Rong Pan, M. J. Seamons, H. Li, R. Hung, and S. Parikh. April-May 2002. "Advance Process Control Solutions for Semiconductor LTUE Manufacturing (Abstract)." 13th Annual IEEE/SEMI Advanced Semiconductor Manufacturing Conference. Advancing the Science and Technology of Semiconductor Manufacturing. ASMC 2002, pp. 101-106. Boston, MA.

/Lynette Umez Eronini/ (09/07/2006)

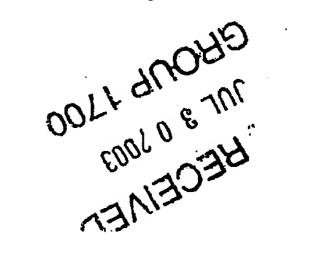
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

LTUE

LTUE

**EXAMINER** 

363.



Campbell, W. J., S. K. Firth, A. J. Toprac, and T. F. Edgar. May 2002. "A Comparison of Run-to-Run

Control Algorithms (Abstract)." Proceedings of 2002 American Control Conference, vol. 3, pp. 2150-2155.

Good, Richard and S. Joe Qin. May 2002. "Stability Analysis of Double EWMA Run-to-Run Control with

Metrology Delay." IEEE/CPMT International Electronics Manufacturing Technology Symposium, pp. 355-

**DATE CONSIDERED** 

INFORMATION DISCLOSURE

CITATION IN AN

APPLICATION

(PTO-1449)

APPLICATION

APPLICANT

APPLICATION

APPLICANT

APPLICATION

APPLICANT

APPLICATION

APPLICANT

THANMIGASUNDR SHEET 11 OF 11 SERIAL NO. 09/943,955 RECEIVED APR 2 8 2003 SHANMUGASUNDRATECHAOLOGY Center 2100 **FILING DATE GROUP** August 31, 2001 2122 OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Smith, Stewart, Anthony J. Walton, Alan W. S. Ross, Georg K. H. Bodammer, and J. T. M. Stevenson. May 2002. "Evaluation of Sheet Resistance and Electrical Linewidth Measurement Techniques for Copper LTUE Damascene Interconnect." IEEE Transactions on Semiconductor Manufacturing, vol. 15, no. 2, pp. 214-222. Itabashi, Takeyuki, Hiroshi Nakano, and Haruo Akahoshi. June 2002. "Electroless Deposited CoWB for LTUE Copper Diffusion Barrier Metal." IEEE International Interconnect Technology Conference, pp. 285-287. ACM Research, Inc. 2002. "ACM Ultra ECP® System: Electro-Copper Plating (ECP) Deposition." LTUE www.acmrc.com/ecp.html Applied Materials, Inc. 2002. "Applied Materials: Information for Everyone: Copper Electrochemical LTUE Plating." www.appliedmaterials.com/products/copper\_electrochemical\_plating.html. KLA-Tencor Corporation. 2002. "KLA Tencor: Press Release: KLA-Tencor Introduces First Production-LTUE Worthy Copper CMP In-Situ Film Thickness and End-point Control System: Multi-Million Dollar Order Shipped to Major CMP Tool Manufacturer." www.kla-tencor.com/news\_events/press\_releases/press\_releases2001/984086002.html. Takahashi, Shingo, Kaori Tai, Hiizu Ohtorii, Naoki Komai, Yuji Segawa, Hiroshi Horikoshi, Zenya Yasuda, Hiroshi Yamada, Masao Ishihara, and Takeshi Nogami. 2002. "Fragile Porous Low-k/Copper Integration by Using Electro-Chemical Polishing." 2002 Symposium on VLSI Technology Digest of Technical Papers, LTUE pp. 32-33. Cunningham, James A. 2003. "Using Electrochemistry to Improve Copper Interconnects." <a href="http://www.e-LTUE insite.net/semiconductor/index.asp?layout=article&articleid=CA47465> LTUE March 25, 2003. International Search Report for PCT/US02/24859 prepared by the European Patent Office. Adams, Bret W., Bogdan Swedek, Rajeev Bajaj, Fritz Redeker, Manush Birang, and Gregory Amico. "Full-Wafer Endpoint Detection Improves Process Control in Copper CMP." Semiconductor Fabtech - 12th LTUE Edition. Applied Materials, Inc., Santa Clara, CA. no dete Berman, Mike, Thomas Bibby, and Alan Smith. "Review of In Situ & In-line Detection for CMP LTUE Applications." Semiconductor Fabtech, 8th Edition, pp. 267-274. Wdate "Semiconductor Manufacturing: An Overview." <a href="http://users.ece.gatech.edu/~gmay/overview.html">http://users.ece.gatech.edu/~gmay/overview.html</a> LTUE HECELAGATE 1200 BECELAGATE **EXAMINER** DATE CONSIDERED /Lynette Umez Eronini/ (09/07/2006)

SHEET 1 OE 1 SERIAL NO. ATTY. DOCKET NO. 09/943,955 005918 INFORMATION DISCLOSURE USA/FPS/MMCS/APC RECEIVED CITATION IN AN **APPLICATION** JUL 0 7 2003 (PTO-1449) Technology Center 2100 **APPLICANT** SHANMUGASUNDRAM et al. FILING DATE GROUP 2122 August 31, 2001 **U.S. PATENT DOCUMENTS EXAMINER'S** FILING DATE INITIALS PATENT NO. DATE NAME **CLASS SUBCLASS** LTUE 06/23/71 3,767,900 10/23/73 Chao et al. 11/18/75 LTUE 3,920,965 Sohrwardy 03/04/74 LTUE 01/11/83 10/20/80 4,368,510 Anderson LTUE 4,616,308 10/07/86 Morshedi et al. 12/02/85 4,663,703 05/05/87 Axelby et al. 10/02/85 LTUE 5,347,446 09/13/94 02/10/92 Iino et al. LTUE 05/21/96 Cawlfield 5,519,605 10/24/94 LTUE LTUE 6,128,016 10/03/00 Coelho et al. 12/20/96 LTUE 6,219,711 04/17/01 Chari 10/01/97 06/19/01 LTUE 6,249,712 Boiquaye 09/25/96 LTUE 6,278,899 08/21/01 Piche et al. 10/06/98 2001/0039462 11/08/01 Mendez et al. 04/02/01 LTUE 2001/0040997 LTUE 11/15/01 Tsap et al. 05/15/01 LTUE 2002/0128805 09/12/02 Goldman et al. 12/26/00 **FOREIGN PATENT DOCUMENTS** Translation **EXAMINER'S** INITIALS PATENT NO. DATE **COUNTRY** CLASS **SUBCLASS** Yes No EP 1 067 757 01/10/01 X LTUE Europe • WO 01/33277 . 05/10/01 WO X LTUE WO 02/31613 A2\_ X 04/18/02 WO LTUE LTUE WO 02/31613 A3 J 04/18/02 WO X OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) LTUE Levine, Martin D. 1985. Vision in Man and Machine. New York: McGraw-Hill, Inc. pp. ix-xii, 1-58. Pilu, Maurizio. September 2001. "Undoing Page Curl Distortion Using Applicable Surfaces." IEEE LTUE International Conference on Image Processing. Thessalonica, Greece. 23 May 2003. Written Opinion for PCT/US01/24910. LTUE DATE CONSIDERED **EXAMINER** /Lynette Umez Eronini/ (09/07/2006)

SHEET 1 OF 1.

INF	ORMATION I CITATION APPLICA	SURE	ATTY. DOCKET NO 005918 USA/FPS/MMCS/		SERIAL NO. 09/943,955		•	
101PE	(PTO-14	<del>_</del> _			İ			
<b>y</b>	<b>6</b>	,		APPLICANT	L	<del></del>	<del></del>	
ar e o roo				SHANMUGASUN	IDRAM e	t al.		
Pa.	.8			FILING DATE	T	GROUP		
THE CENTER	ARK			August 31, 2001	1	2122		
RADES		U	.S. PATENT DO	CUMENTS	1			
EXAMINER'S INITIALS	PATENT NO.	DATE	N	IAME	CLASS	SUBCLASS	FILING	DATE
LTUE	5,901,313	05/04/99	Wolf et al.			Ì	09/02/	97
LTUE	6,002,989	12/14/99	Shiba et al.			/ED	04/01/	97
LTUE	6,094,688	07/25/00	Mellen-Garnett		CEIN	/LU	03/12/	98
LTUE	6,340,602	01/22/02	Johnson et al.	O	CT 1 0 2	2003	02/12/	01
LTUE	6,345,288	02/05/02	Reed et al.	<del>-</del>	<del>/                                     </del>		05/15/	00
LTUE	6,368,879	04/09/02	Toprac	Techno	logy Ce	ter 2100	09/22/	99
LTUE	US-2002/0107604	08/08/02	Riley et al.				12/06/	00
LTUE	6,470,230	10/22/02	Toprac et al.				01/04/	00
LTUE	6,482,660	11/19/02	Conchieri et al.	<del></del>	-		03/19/	01
LTUE	6,567,717	05/20/03	Krivokapic et al				01/19/	00
		FOR	 EIGN PATENT	DOCUMENTS				
EXAMINER'S				DO CONTENTO	<u> </u>	<u> </u>	Trans	slation
INITIALS	PATENT NO.	DATE	CO	UNTRY	CLASS	SUBCLASS	Yes	No
LTUE	WO 99/59200	11/18/99	WIPO			<u> </u>	Х	
LTUE	WO 01/52319	07/19/01	WIPO				Х	
	OTHER	ART (Inclu	ding Author, Tit	tle, Date, Pertinent	Pages, Etc	<u> </u>	<u> </u>	<u> </u>
LTUE	Williams, Randy, D Shanthikumar. Octo	adi Gudmun ber 1999. "C ference Proc	dsson, Kevin Mon Optimized Sample	nahan, Raman Nuran Planning for Wafer EE International Syn	i, Meryl St Defect Ins	toller and J. G pection," Sem	iconduc	:tor
LTUE		ation to Pay		nd Communication I	Relating to	the Results of	the Par	tial
LTUE	01 August 2003. W	ritten Opinio	on for PCT/US01	/27406.				
LTUE	20 August 2003. W	ritten Opinio	on for PCT/US01	/22833.				
EXAMINER	/Lynet	te Umez	Eronini/ (0	ATE CONSIDERED 09/07/2006)				

SHEET 1 OF 2

IN	INFORMATION DISCLOSURE CITATION IN AN APPLICATION (PTO-1449)				O. /APC	SERIAL NO. 09/943,955	
	(0.2.0	M	N 5 d MIN SE	APPLICANT SHANMUGASUI	NDRAM 6	et al.	
		TATE	A 2 9 MILA SE	FILING DATE August 31, 2001		GROUP 1765	
	•	ľ	J.S. PATENT DO	OCUMENTS		•	
EXAMINER'S INITIALS	PATENT NO.	DATE	1	NAME	CLASS	SUBCLASS	FILING DATE
LTUE	4,901,218	02/13/90	Cornwell				03/04/88
LTUE	5,427,878	06/27/95	Corliss				05/16/94
LTUE	5,761,065	06/02/98	Kittler et al.				03/30/95
LTUE	5,862,054	01/19/99	Li				02/20/97
LTUE	5,912,678	06/15/99	Saxena et al.				04/14/97
LTUE	5,926,690	07/20/99	Toprac et al.				05/28/97
LTUE	6,074,443	06/13/00	Venkatesh et al				01/29/98
LTUE	6,111,634	08/29/00	Pecen et al.				05/28/97
LTUE	6,150,664	11/21/00	Su				06/29/99
LTUE	6,245,581 B1	06/12/01	Bonser et al.				04/19/00
LTUE	2001/0044667 A1	11/22/01	Nakano et al.				05/16/01
LTUE	6,346,426 B1	02/12/02	Toprac et al.				11/17/00
LTUE	6,363,294 B1	03/26/02	Coronel et al.	· · · · · · · · · · · · · · · · · · ·			12/29/98
LTUE	6,442,496 B1	08/27/02	Pasadyn et al.		-	<del>                                     </del>	08/08/00
LTUE	6,486,492 B1	11/26/02	Su		<del></del>		11/20/00
LTUE	6,492,281 B1	12/10/02	Song et al.				09/22/00
LTUE	6,540,591 B1	04/01/03	Pasadyn et al.				04/18/01
LTUE	6,560,504 B1	05/06/03	Goodwin et al.				09/29/99
LTUE	6,590,179 B2	07/08/03	Tanaka et al.			-	02/26/01
LTUE	6,604,012 B1	08/05/03	Cho et al.			<del> </del>	08/23/00
LTUE	6,618,692 B2	09/09/03	Takahashi et al.	•		<del> </del>	02/26/01
LTUE	6,625,497 B2	09/23/03	Fairbairn et al.				07/10/01
LTUE	6,640,151 B1	10/28/03	Somekh et al.				12/22/99
EXAMINER				ATE CONSIDEREI	)		
	/Lyn	ette Umez	Eronini/  (	09/07/2006)			

SHEET 2 OF 2

10.71			ATTY. DOCKET N 005918	SERIAL NO. 09/943,955						
INI	FORMATION		OURE	USA/FPS/MMCS	/APC					
	CITATION	N IN AN								
	APPLICA	ATION	9 2004 HO HO HADELINE							
	(PTO-1	11/97	ook :							
	(110)	1	9 2014	APPLICANT						
		HAR .	Ĭ.	SHANMUGASUI	NDRAM e	t al.				
		PATEUT	a TRADERT	FILING DATE	T	GROUP				
		141	8111	August 31, 2001		1765				
	· · · · · · · · · · · · · · · · · · ·	FOR	EIGN PATENT	DOCUMENTS	······································			4.44		
EXAMINER'S INITIALS	PATENT NO.	DATE	co	UNTRY	CLASS	SUBCLASS	1 ran	slation		
							Yes	No		
LTUE	0 397 924 A1	11/22/90	Europe				X			
	OTHE	R ART (Inclu	ding Author, Ti	tle, Date, Pertinent	Pages, Etc	દ.)				
	1		•	94. "Task Planning		•		_		
LTUE	, ,	Systems." Intelligent Robots and Systems '94. Advanced Robotic Systems and the Real World, IROS '94.  Proceedings of the IEEE/RSJ/GI International Conference on Munich, Germany 12-16 Sept. 1994. New								
		rk, New York: IEEE. pp. 105-112.								
LTUE	March 15, 2002. C	Office Action for	or U.S. Serial No	. 09/469,227, filed D	ecember 2	2, 1999.				
LTUE	March 29, 2002. C	Office Action for	or U.S. Serial No	. 09/363,966, filed J	uly 29, 199	9.				
LTUE	June 20, 2002. Off	ice Action for	U.S. Serial No. (	09/619,044, filed Jul	y 19, 2000.					
LTUE	September 26, 2002	2. Office Acti	on for U.S. Seria	l No. 09/637,620, fil	ed August	11, 2000.				
LTUE	October 23, 2002.	Office Action	for U.S. Serial N	lo. 09/469,227, filed	December	22, 1999.				
LTUE	December 17, 2002	2. Office Action	on for U.S. Serial	No. 09/363,966, file	d July 29,	1999.				
LTUE	February 10, 2003.	Office Action	for U.S. Serial l	No. 09/619,044, filed	l July 19, 2	000.				
LTUE	April 9, 2003. Offi	ice Action for	U.S. Serial No. 0	9/928,474, filed Aug	ust 14, 200	01.				
LTUE	May 8, 2003. Office	e Action for U	J.S. Serial No. 09	9/637,620, filed Aug	ust 11, 200	0.				
LTUE	June 18, 2003. Off	ice Action for	U.S. Serial No. (	09/655,542, filed Sep	tember 6,	2000.				
LTUE	August 8, 2003. In	ternational Sea	arch Report for P	CT/US03/08513.						
LTUE	August 25, 2003. (	Office Action f	or U.S. Serial No	o. 10/100,184, filed 1	March 19, 2	2002.				
LTUE	September 15, 2003	3. Office Acti	on for U.S. Serial	l No. 09/928,474, fil	ed August	14, 2001.				
LTUE	November 5, 2003.	Office Action	n for U.S. Serial	No. 10/172,977, filed	June 18, 2	2002.				
LTUE	December 1, 2003.	Office Action	for U.S. Serial I	No. 10/173,108, filed	June 18, 2	2002.				
LTUE	December 11, 2003	. Office Action	n for U.S. Serial	No. 09/943,383, file	d August 3	31, 2001.				
LTUE	December 16, 2003	. Internationa	I Search Report f	for PCT/US03/23964						
LTUE	January 20, 2004.	Office Action	for U.S. Serial N	o. 09/927,444, filed	August 13,	2001.				
LTUE	January 23, 2004.	International S	earch Report for	PCT/US02/24860.			<u>.</u>			
LTUE	February 2, 2004.	Office Action	for U.S. Serial N	o. 09/363,966, filed	July 29, 19	99.				
EXAMINER	/Lyn	ette Umez		ATE CONSIDERED 09/07/2006)	)					

SHEET 1 OF 4

SERIAL NO. ATTY. DOCKET NO. INFORMATION DISCLOSURE 09/943,955 005918 USA/ CITATION IN AN FPS/MMCS/APC **APPLICATION** (PTO-1449) **APPLICANT** SHANMUGASUNDRAM et al. FILING DATE GROUP TRADEMA 1765 August 31, 2001

	~ . ~ ~	DOCUMEN	
1 67			11111
		1 74 74 1 I I I W 1 PL 1 V	

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
LTUE	4,957,605	09/18/90	Hurwitt et al.			04/17/89	
LTUE	5,369,544	11/29/94	Mastrangelo			04/05/93	
LTUE	5,444,837	08/22/95	Bomans et al.	İ		12/29/93	
LTUE	5,665,214	09/09/97	Iturralde	-	<del> </del>	05/03/95	
LTUE	5,695,810	12/09/97	Dubin et al.			11/20/96	
LTUE	5,824,599	10/20/98	Schacham-Diamand et al.			01/16/96	
LTUR	5,825,356	10/20/98	Habib et al.		<del> </del>	03/18/96	
LTUE	5,831,851	11/03/98	Eastburn et al.			03/21/95	
LTUE	5,838,951	11/17/98	Song			08/28/96	
LTUE	5,859,777	01/12/99	Yokoyama et al.			05/13/97	
LTUE	5,871,805	02/16/99	Lemelson			04/08/96	
LTUE	5,943,550	08/24/99	Fulford, Jr. et al.		,, <u>,,</u>	03/29/96	
LTUE	6,012,048	01/04/00	Gustin et al.		<del></del>	05/30/97	
LTUE	6,037,664	03/14/00	Zhao et al.			03/31/98	
LTUE	6,059,636	05/09/00	Inaba et al.			07/09/98	
LTUE	6,096,649	08/01/00	Jang			10/25/99	
LTUE	6,100,195	08/08/00	Chan et al.		<u></u>	12/28/98	
LTUE	6,114,238	09/05/00	Liao			05/20/98	
LTUE	6,150,270	11/21/00	Matsuda et al.			01/07/99	
LTUE	6,157,864	12/05/00	Schwenke et al.	:		05/08/98	
LTUE	6,181,013 B1	01/30/01	Liu et al.			03/13/00	
LTUE	6,212,961 B1	04/10/01	Dvir		<u> </u>	02/11/99	
LTUE	6,226,563 B1	05/01/01	Lim			09/04/98	
LTUE	6,237,050 B1	05/22/01	Kim et al.			09/04/98	
LTUE	2001/0006873 A1	07/05/01	Moore			02/13/01	
LTUE	6,259,160 B1	07/10/01	Lopatin et al.			04/21/99	
LTUE	6,281,127 B1	08/28/01	Shue			04/15/99	
EXAMINER DATE CONSIDERED  /Lynette Umez Eronini/ (09/07/2006)							

SHEET 2 OF 4

CITATION IN AN APPLICATION (PTO-1449)  AB6 1 1 2004  CT APPLICATION (PTO-1449)  APPLICANT SHANNUGASUNDRAM et al.  FILING DATE August 31, 2001  APPLICANT SHANNUGASUNDRAM et al.  FILING DATE August 31, 2001  APPLICANT SHANNUGASUNDRAM et al.  FILING DATE AUgust 31, 2001  APPLICANT SHANNUGASUNDRAM et al.  FILING DATE August 31, 2001  APPLICANT SHANNUGASUNDRAM et al.  FILING DATE AUgust 31, 2001  APPLICANT SHANNUGASUNDRAM et al.  FILING DATE AUgust 31, 2001  APPLICANT SHANNUGASUNDRAM et al.  FILING DATE AUgust 31, 2001  APPLICANT SHANNUGASUNDRAM et al.  O3/31/99  ATUE 6,317,643 B1 11/13/01  Domochowski  DOMOCHOWSK							SHEET 2 (	7 4
APPLICATION IN AN APPLICATION (PTO-1449)	IN					O.	SERIAL NO. 09/943 955	
Pro-1449    APPLICANT   SHANMUGASUNDRAM et al.   FILING DATE   August 31, 2001   T/65   T/65						;		
### APPLICANT ### SHANMUGASUNDRAM et al.   FILING DATE   August 31, 2001   1765	MIP	APPLIC.	ATION					
SHANMUGASUNDRAM et al.   FILING DATE   August 31, 2001   1765   1765		(PTO-1	1449)					
FILING DATE   August 31, 2001   Trics   Tric	AUG 1 1	2004	·					
NAME   CLASS   SUBCLASS   FILING	100				SHANMUGASUI	NDRAM 6	et al.	
NAME   CLASS   SUBCLASS   FILING	(FI)	. set of						
EXAMINERS   PATENT NO.   DATE   NAME   CLASS   SUBCLASS   DATE	PRADE	White			August 31, 2001		1765	
NAME			τ	J.S. PATENT DO	CUMENTS			
CTUE	EXAMINER'S INITIALS	PATENT NO.	DATE		IAME	CLASS	SUBCLASS	•
TUE	LTUE	6,317,643 B1	11/13/01	Dmochowski				03/31/99
STUE   6,391,780 B1   05/21/02   Shih et al.   08/23/99     TUE   6,417,014 B1   07/09/02   Lam et al.   10/19/99     TUE   6,427,093 B1   07/30/02   Toprac   10/07/99     TUE   6,449,524 B1   09/10/02   Miller et al.   01/04/00     TUE   6,455,415 B1   09/24/02   Lopatin et al.   04/16/01     TUE   2002/0165636 A1   11/07/02   Hasan   04/24/02     TUE   6,484,064 B1   11/19/02   Campbell   10/05/99     TUE   6,495,452 B1   12/17/02   Shih   08/18/99     TUE   2002/0193899 A1   12/19/02   Shanmugasundram et al.   05/01/02     TUE   2003/0017256 A1   01/23/03   Shimane   06/12/02     TUE   6,515,368 B1   02/04/03   Lopatin et al.   12/07/01     TUE   6,517,414 B1   02/11/03   Tobin et al.   03/10/00     TUE   6,528,409 B1   03/04/03   Lopatin et al.   04/29/02     TUE   6,537,912 B1   03/25/03   Agarwal   08/25/00     TUE   6,580,958 B1   06/17/03   Takano   11/22/99     TUE   6,605,549 B2   08/12/03   Leu et al.   09/29/01     TUE   6,607,976 B2   08/19/03   Chen et al.   09/25/01     TUE   6,630,741 B1   09/03/03   Lopatin et al.   01/05/02     TUE   6,660,633 B1   12/09/03   Lopatin et al.   02/26/02     TUE   6,660,633 B1   12/09/03   Lopatin et al.   02/26/02     TUE   6,603,741 B1   09/03/03   Lopatin et al.   02/26/02     TUE   6,603,741 B1   09/03/03   Lopatin et al.   02/26/02     TUE   6,606,633 B1   12/09/03   Lopatin et al.   02/26/02     TUE   6,606,633 B1   12/09/03   Lopatin et al.   02/26/02     TUE   6,708,074 B1   03/16/04   Chi et al.   08/11/00     TUE   6,708,075 B2   03/16/04   Sonderman et al.   04/10/10/10/10/10/10/10/10/10/10/10/10/10/	LTUE	6,339,727 B1	01/15/02	Ladd				12/21/98
TUE	LTUE	6,355,559 B1	03/12/02	Havemann et al	•			11/03/00
TUE   6,427,093 B1   07/30/02   Toprac   10/07/99     TUE   6,449,524 B1   09/10/02   Miller et al.   01/04/00     TUE   6,455,415 B1   09/24/02   Lopatin et al.   04/16/01     TUE   2002/0165636 A1   11/07/02   Hasan   04/24/02     TUE   6,484,064 B1   11/19/02   Campbell   10/05/99     TUE   6,495,452 B1   12/17/02   Shih   08/18/99     TUE   2002/0193899 A1   12/19/02   Shanmugasundram et al.   05/01/02     TUE   2003/0017256 A1   01/23/03   Shimane   06/12/02     TUE   6,515,368 B1   02/04/03   Lopatin et al.   12/07/01     TUE   6,517,414 B1   02/11/03   Tobin et al.   03/10/00     TUE   6,537,912 B1   03/25/03   Agarwal   08/25/00     TUE   6,580,958 B1   06/17/03   Takano   11/22/99     TUE   6,605,549 B2   08/12/03   Leu et al.   09/29/01     TUE   6,607,976 B2   08/12/03   Leu et al.   09/25/01     TUE   6,660,533 B1   09/09/03   Osterheld   04/05/01     TUE   6,630,741 B1   10/07/03   Lopatin et al.   11/05/02     TUE   6,630,741 B1   10/07/03   Lopatin et al.   11/05/02     TUE   6,660,633 B1   12/09/03   Lopatin et al.   11/05/02     TUE   6,708,074 B1   03/16/04   Chi et al.   09/21/00     TUE   6,708,075 B2   03/16/04   Sonderman et al.   11/16/01     TUE   6,728,587 B2   04/27/04   Goldman et al.   DATE CONSIDERED	LTUE	6,391,780 B1	05/21/02	Shih et al.				08/23/99
TUE   6,449,524 B1   09/10/02   Miller et al.   01/04/00     TUE   6,455,415 B1   09/24/02   Lopatin et al.   04/16/01     TUE   2002/0165636 A1   11/07/02   Hasan   04/24/02     TUE   6,484,064 B1   11/19/02   Campbell   10/05/99     TUE   6,495,452 B1   12/17/02   Shih   08/18/99     TUE   2002/0193899 A1   12/19/02   Shanmugasundram et al.   05/01/02     TUE   2003/0017256 A1   01/23/03   Shimane   06/12/02     TUE   6,515,368 B1   02/04/03   Lopatin et al.   12/07/01     TUE   6,517,414 B1   02/11/03   Tobin et al.   03/10/00     TUE   6,528,409 B1   03/04/03   Lopatin et al.   04/29/02     TUE   6,537,912 B1   03/25/03   Agarwal   08/25/00     TUE   6,580,958 B1   06/17/03   Takano   11/22/99     TUE   6,605,549 B2   08/12/03   Leu et al.   09/29/01     TUE   6,607,976 B2   08/19/03   Chen et al.   09/25/01     TUE   6,616,513 B1   09/09/03   Osterheld   04/05/01     TUE   6,630,741 B1   10/07/03   Lopatin et al.   11/05/02     TUE   6,630,741 B1   10/07/03   Lopatin et al.   11/05/02     TUE   6,660,633 B1   12/09/03   Lopatin et al.   11/05/02     TUE   6,708,074 B1   03/16/04   Chi et al.   08/11/00     TUE   6,708,075 B2   03/16/04   Sonderman et al.   11/16/01     TUE   6,728,587 B2   04/27/04   Goldman et al.   11/16/01     TUE   6,728,587 B2   04/27/04   Goldman et al.   12/27/00	LTUE	6,417,014 B1	07/09/02	Lam et al.				10/19/99
TUE 6,455,415 B1 09/24/02 Lopatin et al. 04/16/01  TUE 2002/0165636 A1 11/07/02 Hasan 04/24/02  TUE 6,484,064 B1 11/19/02 Campbell 10/05/99  TUE 6,495,452 B1 12/17/02 Shih 08/18/99  TUE 2002/0193899 A1 12/19/02 Shanmugasundram et al. 05/01/02  TUE 2003/0017256 A1 01/23/03 Shimane 06/12/02  TUE 6,515,368 B1 02/04/03 Lopatin et al. 12/07/01  TUE 6,517,414 B1 02/11/03 Tobin et al. 03/10/00  TUE 6,528,409 B1 03/04/03 Lopatin et al. 04/29/02  TUE 6,537,912 B1 03/25/03 Agarwal 08/25/00  TUE 6,580,958 B1 06/17/03 Takano 11/22/99  TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,630,741 B1 10/07/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,630,74 B1 11/05/02  TUE 6,630,74 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	6,427,093 B1	07/30/02	Toprac	<u> </u>			10/07/99
TUE 2002/0165636 A1 11/07/02 Hasan 04/24/02  TUE 6,484,064 B1 11/19/02 Campbell 10/05/99  TUE 6,495,452 B1 12/17/02 Shih 08/18/99  TUE 2002/0193899 A1 12/19/02 Shanmugasundram et al. 05/01/02  TUE 2003/0017256 A1 01/23/03 Shimane 06/12/02  TUE 6,515,368 B1 02/04/03 Lopatin et al. 12/07/01  TUE 6,517,414 B1 02/11/03 Tobin et al. 03/10/00  TUE 6,528,409 B1 03/04/03 Lopatin et al. 04/29/02  TUE 6,537,912 B1 03/25/03 Agarwal 08/25/00  TUE 6,580,958 B1 06/17/03 Takano 11/22/99  TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,630,741 B1 10/07/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,606,633 B1 12/09/03 Lopatin et al. 12/07/01  TUE 6,708,075 B2 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00	LTUE	6,449,524 B1	09/10/02	Miller et al.				01/04/00
TUE   6,484,064 B1   11/19/02   Campbell   10/05/99     TUE   6,495,452 B1   12/17/02   Shih   08/18/99     TUE   2002/0193899 A1   12/19/02   Shanmugasundram et al.   05/01/02     TUE   2003/0017256 A1   01/23/03   Shimane   06/12/02     TUE   6,515,368 B1   02/04/03   Lopatin et al.   12/07/01     TUE   6,517,414 B1   02/11/03   Tobin et al.   03/10/00     TUE   6,528,409 B1   03/04/03   Lopatin et al.   04/29/02     TUE   6,537,912 B1   03/25/03   Agarwal   08/25/00     TUE   6,580,958 B1   06/17/03   Takano   11/22/99     TUE   6,6605,549 B2   08/12/03   Leu et al.   09/29/01     TUE   6,667,976 B2   08/19/03   Chen et al.   09/25/01     TUE   6,664,075 B1   09/09/03   Lopatin et al.   11/05/02     TUE   6,630,741 B1   10/07/03   Lopatin et al.   11/05/02     TUE   6,660,633 B1   12/09/03   Lopatin et al.   12/07/01     TUE   6,708,074 B1   03/16/04   Chi et al.   08/11/00     TUE   6,708,075 B2   03/16/04   Sonderman et al.   11/16/01     TUE   6,728,587 B2   04/27/04   Goldman et al.   12/27/00     XAMINER   DATE CONSIDERED	LTUE	6,455,415 B1	09/24/02	Lopatin et al.				04/16/01
TUE 6,495,452 B1 12/17/02 Shih 08/18/99  TUE 2002/0193899 A1 12/19/02 Shanmugasundram et al. 05/01/02  TUE 2003/0017256 A1 01/23/03 Shimane 06/12/02  TUE 6,515,368 B1 02/04/03 Lopatin et al. 12/07/01  TUE 6,517,414 B1 02/11/03 Tobin et al. 03/10/00  TUE 6,528,409 B1 03/04/03 Lopatin et al. 04/29/02  TUE 6,537,912 B1 03/25/03 Agarwal 08/25/00  TUE 6,580,958 B1 06/17/03 Takano 11/22/99  TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,624,075 B1 09/23/03 Lopatin et al. 11/05/02  TUE 6,660,633 B1 12/09/03 Lopatin et al. 12/07/01  TUE 6,660,633 B1 12/09/03 Lopatin et al. 12/07/01  TUE 6,660,633 B1 12/09/03 Lopatin et al. 12/07/01  TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	2002/0165636 A1	11/07/02	Hasan			1	04/24/02
TUE   2002/0193899 A1   12/19/02   Shanmugasundram et al.   05/01/02	LTUE	6,484,064 B1	11/19/02	Campbell				10/05/99
TUE         2003/0017256 A1         01/23/03         Shimane         06/12/02           TUE         6,515,368 B1         02/04/03         Lopatin et al.         12/07/01           TUE         6,517,414 B1         02/11/03         Tobin et al.         03/10/00           TUE         6,528,409 B1         03/04/03         Lopatin et al.         04/29/02           TUE         6,537,912 B1         03/25/03         Agarwal         08/25/00           TUE         6,580,958 B1         06/17/03         Takano         11/22/99           TUE         6,605,549 B2         08/12/03         Leu et al.         09/29/01           TUE         6,607,976 B2         08/19/03         Chen et al.         09/25/01           TUE         6,616,513 B1         09/09/03         Osterheld         04/05/01           TUE         6,624,075 B1         09/23/03         Lopatin et al.         11/05/02           TUE         6,630,741 B1         10/07/03         Lopatin et al.         12/07/01           TUE         6,660,633 B1         12/09/03         Lopatin et al.         02/26/02           TUE         6,708,074 B1         03/16/04         Chi et al.         08/11/00           TUE         6,708,075 B2         03/16/0	LTUE	6,495,452 B1	12/17/02	Shih				08/18/99
TUE 6,515,368 B1 02/04/03 Lopatin et al. 12/07/01  TUE 6,517,414 B1 02/11/03 Tobin et al. 03/10/00  TUE 6,528,409 B1 03/04/03 Lopatin et al. 04/29/02  TUE 6,537,912 B1 03/25/03 Agarwal 08/25/00  TUE 6,580,958 B1 06/17/03 Takano 11/22/99  TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,630,741 B1 10/07/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,606,633 B1 12/09/03 Lopatin et al. 02/26/02  TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	2002/0193899 A1	12/19/02	Shanmugasundr	am et al.			05/01/02
TUE 6,517,414 B1 02/11/03 Tobin et al. 03/10/00  TUE 6,528,409 B1 03/04/03 Lopatin et al. 04/29/02  TUE 6,537,912 B1 03/25/03 Agarwal 08/25/00  TUE 6,580,958 B1 06/17/03 Takano 11/22/99  TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,624,075 B1 09/23/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,660,633 B1 12/09/03 Lopatin et al. 02/26/02  TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	2003/0017256 A1	01/23/03	Shimane				06/12/02
ATUE       6,528,409 B1       03/04/03       Lopatin et al.       04/29/02         ATUE       6,537,912 B1       03/25/03       Agarwal       08/25/00         ATUE       6,580,958 B1       06/17/03       Takano       11/22/99         ATUE       6,605,549 B2       08/12/03       Leu et al.       09/29/01         ATUE       6,607,976 B2       08/19/03       Chen et al.       09/25/01         ATUE       6,616,513 B1       09/09/03       Osterheld       04/05/01         ATUE       6,624,075 B1       09/23/03       Lopatin et al.       11/05/02         ATUE       6,630,741 B1       10/07/03       Lopatin et al.       12/07/01         ATUE       6,660,633 B1       12/09/03       Lopatin et al.       02/26/02         ATUE       6,708,074 B1       03/16/04       Chi et al.       08/11/00         ATUE       6,708,075 B2       03/16/04       Sonderman et al.       11/16/01         ATUE       6,728,587 B2       04/27/04       Goldman et al.       12/27/00         XAMINER       DATE CONSIDERED	LTUE	6,515,368 B1	02/04/03	Lopatin et al.				12/07/01
TUE 6,537,912 B1 03/25/03 Agarwal 08/25/00  TUE 6,580,958 B1 06/17/03 Takano 11/22/99  TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,624,075 B1 09/23/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,660,633 B1 12/09/03 Lopatin et al. 02/26/02  TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	6,517,414 B1	02/11/03	Tobin et al.				03/10/00
TUE 6,580,958 B1 06/17/03 Takano 11/22/99  TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,624,075 B1 09/23/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,660,633 B1 12/09/03 Lopatin et al. 02/26/02  TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	6,528,409 B1	03/04/03	Lopatin et al.				04/29/02
TUE 6,605,549 B2 08/12/03 Leu et al. 09/29/01  TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,624,075 B1 09/23/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,660,633 B1 12/09/03 Lopatin et al. 02/26/02  TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	6,537,912 B1	03/25/03	Agarwal				08/25/00
TUE 6,607,976 B2 08/19/03 Chen et al. 09/25/01  TUE 6,616,513 B1 09/09/03 Osterheld 04/05/01  TUE 6,624,075 B1 09/23/03 Lopatin et al. 11/05/02  TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01  TUE 6,660,633 B1 12/09/03 Lopatin et al. 02/26/02  TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00  TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01  TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	6,580,958 B1	06/17/03	Takano				11/22/99
TUE       6,616,513 B1       09/09/03       Osterheld       04/05/01         TUE       6,624,075 B1       09/23/03       Lopatin et al.       11/05/02         TUE       6,630,741 B1       10/07/03       Lopatin et al.       12/07/01         TUE       6,660,633 B1       12/09/03       Lopatin et al.       02/26/02         TUE       6,708,074 B1       03/16/04       Chi et al.       08/11/00         TUE       6,708,075 B2       03/16/04       Sonderman et al.       11/16/01         TUE       6,728,587 B2       04/27/04       Goldman et al.       12/27/00         XAMINER       DATE CONSIDERED	LTUE	6,605,549 B2	08/12/03	Leu et al.				09/29/01
TUE 6,624,075 B1 09/23/03 Lopatin et al. 11/05/02 TUE 6,630,741 B1 10/07/03 Lopatin et al. 12/07/01 TUE 6,660,633 B1 12/09/03 Lopatin et al. 02/26/02 TUE 6,708,074 B1 03/16/04 Chi et al. 08/11/00 TUE 6,708,075 B2 03/16/04 Sonderman et al. 11/16/01 TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00 XAMINER DATE CONSIDERED	LTUE	6,607,976 B2	08/19/03	Chen et al.				09/25/01
TUE       6,630,741 B1       10/07/03       Lopatin et al.       12/07/01         TUE       6,660,633 B1       12/09/03       Lopatin et al.       02/26/02         TUE       6,708,074 B1       03/16/04       Chi et al.       08/11/00         TUE       6,708,075 B2       03/16/04       Sonderman et al.       11/16/01         TUE       6,728,587 B2       04/27/04       Goldman et al.       12/27/00         XAMINER       DATE CONSIDERED	LTUE	6,616,513 B1	09/09/03	Osterheld				04/05/01
TUE       6,660,633 B1       12/09/03       Lopatin et al.       02/26/02         TUE       6,708,074 B1       03/16/04       Chi et al.       08/11/00         TUE       6,708,075 B2       03/16/04       Sonderman et al.       11/16/01         TUE       6,728,587 B2       04/27/04       Goldman et al.       12/27/00         XAMINER       DATE CONSIDERED	LTUE	6,624,075 B1	09/23/03	Lopatin et al.		· · · · · · · · · · · · · · · · · · ·		11/05/02
TUE       6,708,074 B1       03/16/04       Chi et al.       08/11/00         TUE       6,708,075 B2       03/16/04       Sonderman et al.       11/16/01         TUE       6,728,587 B2       04/27/04       Goldman et al.       12/27/00         XAMINER       DATE CONSIDERED	TUE	6,630,741 B1	10/07/03	Lopatin et al.				12/07/01
TUE       6,708,075 B2       03/16/04       Sonderman et al.       11/16/01         TUE       6,728,587 B2       04/27/04       Goldman et al.       12/27/00         XAMINER       DATE CONSIDERED	LTUE	6,660,633 B1	12/09/03	Lopatin et al.				02/26/02
TUE 6,728,587 B2 04/27/04 Goldman et al. 12/27/00  XAMINER DATE CONSIDERED	LTUE	6,708,074 B1	03/16/04	Chi et al.				08/11/00
XAMINER DATE CONSIDERED	LTUE	6,708,075 B2	03/16/04	Sonderman et al.				11/16/01
	LTUE	6,728,587 B2	04/27/04	Goldman et al.				12/27/00
/Lynette Umez Eronini/ (09/07/2006)	EXAMINER			DA	TE CONSIDERED			
		/Lyne	tte Umez	Eronini/ (0:	9/07/2006)			

		SHEET 3 OF 4								
IN	<b>FORMATION</b>	ATTY, DOCKET NO.		SERIAL NO.						
CITATION IN AN				005918 USA/ FPS/MMCS/APC		09/943,955				
A DDI ICATIONI										
OIPE (PTO-1449)										
APPLICANT										
AUG 1 1 2004 PARTICIPATION TO THE PARTICIPATION TO				SHANMUGASUNDRAM et al.						
TE .	<u>\$</u>	FILING DATE		GROUP						
BTRADE	ARIE	August 31, 2001 1765								
FOREIGN PATENT DOCUMENTS										
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY		CLASS	SUBCLASS	Translation			
INITIALS	PATENT NO.	DATE					Yes	No		
LTUE	EP 0 932 195 A1	07/28/99	EP	· · · · · · · · · · · · · · · · · · ·		<u> </u>	Х			
LTUE	EP 1 083 470 A2	03/14/01	EP				X			
LTUE	GB 2 365 215 A	02/13/02	GB				X			
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)										
LTUE	Sun, S.C. 1998. "CVD and PVD Transition Metal Nitrides as Diffusion Barriers for Cu Metallization." <i>IEEE</i> . pp. 243-246.									
T MITE	Tagami, M., A. Furuya, T. Onodera, and Y. Hayashi. 1999. "Layered Ta-nitrides (LTN) Barrier Film by									
LTUE	Power Swing Sputtering (PSS) Technique for MOCVD-Cu Damascene Interconnects." IEEE. pp. 635-638.									
ייינים דייינים	Yamagishi, H., Z. Tokei, G.P. Beyer, R. Donaton, H. Bender, T. Nogami, and K. Maex. 2000. "TEM/SEM Investigation and Electrical Evaluation of a Bottomless I-PVD TA(N) Barrier in Dual Damascene"									
LTUE	(Abstract). Advanced Metallization Conference 2000. San Diego, CA.									
LTUE	Eisenbraun, Eric, Oscar van der Straten, Yu Zhu, Katharine Dovidenko, and Alain Kaloyeros. 2001.									
	"Atomic Layer Deposition (ALD) of Tantalum-Based Materials for Zero Thickness Copper Barrier Applications" (Abstract). IEEE. pp. 207-209.									
	Smith, S.R., K.E. Elers, T. Jacobs, V. Blaschke, and K. Pfeifer. 2001. "Physical and Electrical									
LTUE	Characterization of ALD Tin Used as a Copper Diffusion Barrier in 0.25 mum, Dual Damascene Backend									
	Structures" (Abstract). Advanced Metallization Conference 2001. Montreal, Quebec.									
LTUE	Kim, Y.T. and H. Sim. 2002. "Characteristics of Pulse Plasma Enhanced Atomic Layer Deposition of Tungsten Nitride Diffusion Barrier for Copper Interconnect" (Abstract). IEIC Technical Report. Vol. 102,									
	No. 178, pp. 115-118.									
LTUE	Elers, Kai-Erik, Ville Saanila, Pekka J. Soininen, Wei-Min Li, Juhana T. Kostamo, Suvi Haukka, Jyrki									
	Juhanoja, and Wim F.A. Besling. 2002. "Diffusion Barrier Deposition on a Copper Surface by Atomic Layer Deposition" (Abstract). Advanced Materials, Vol. 14, No. 13-14, pp. 140-153									
	Layer Deposition" (Abstract). Advanced Materials. Vol. 14, No. 13-14, pp. 149-153.  Peng, C.H., C.H. Hsieh, C.L. Huang, J.C. Lin, M.H. Tsai, M.W. Lin, C.L. Chang, Winston S. Shue, and M.S.									
LTUE	Liang. 2002. "A 90nm Generation Copper Dual Damascene Technology with ALD TaN Barrier." IEEE.									
	pp. 603-606.									
LTUE	Van der Straten, O., Y. Zhu, E. Eisenbraun, and A. Kaloyeros. 2002. "Thermal and Electrical Barrier Performance Testing of Ultrathin Atomic Layer Deposition Tantalum Based Materials for Nanoscale Connect									
	Performance Testing of Ultrathin Atomic Layer Deposition Tantalum-Based Materials for Nanoscale Copper Metallization." IEEE. pp. 188-190.									
	Wu, Z.C., Y.C. Lu, C.C. Chiang, M.C. Chen, B.T. Chen, G.J. Wang, Y.T. Chen, J.L. Huang, S.M. Jang, and									
LTUE	M.S. Liang. 2002. "Advanced Metal Barrier Free Cu Damascene Interconnects with PECVD Silicon									
LTUE	Carbide Barriers for 90/65-nm BEOL Technology." IEEE. pp. 595-598.  July 25, 2003. International Search Report for PCT/US02/24858.									
LTUE	March 30, 2004. Written Opinion for PCT/US02/19062.									
LTUE	April 9, 2004. Written Opinion for PCT/US02/19116.									
<del></del>	April 22, 2004. Office Action for U.S. Serial No. 09/998,372, filed November 30, 2001.									
EXAMINER DATE CONSIDERED										
/Lynette Umez Eronini/ (09/07/2006)										
								()		

SHEET 4 OF 4

			SHEET <u>4</u> OF <u>4</u>					
IN	VFORMATION DISCLOSURE	ATTY. DOCKET NO.	SERIAL NO.					
	CITATION IN AN	005918 USA/ FPS/MMCS/APC	09/943,955					
TPE	APPLICATION							
	(PTO-1449)							
e a anni		APPLICANT	<u>l</u>					
B 1 1 ZUU4	<u>Ş</u> )	SHANMUGASUNDRAI	M et al.					
TRADEMARKO		FILING DATE	GROUP					
PRADEMA		August 31, 2001	1765					
·	OTHER ART (Including Author,	Title, Date, Pertinent Pages,	Etc.)					
LTUE	April 28, 2004. Written Opinion for PCT/US02	/19117.						
LTUE	April 29, 2004. Written Opinion for PCT/US02/19061.							
LTUE	May 5, 2004. International Preliminary Examination Report for PCT/US01/27406.							
LTUE	May 28, 2004. Office Action for U.S. Serial No. 09/943,383, filed August 31, 2001.							
LTUE	June 3, 2004. Office Action for U.S. Serial No. 09/928,474, filed August 14, 2001.							
LTUE	June 23, 2004. Office Action for U.S. Serial No. 10/686,589, filed October 17, 2003.							
LTUE	June 30, 2004. Office Action for U.S. Serial No. 09/800,980, filed March 8, 2001.							
LTUE	July 12, 2004. Office Action for U.S. Serial No.	July 12, 2004. Office Action for U.S. Serial No. 10/173,108, filed June 8, 2002.						
		· · · · · · · · · · · · · · · · · · ·	······································					
-			<u></u>					
			· · · · · · · · · · · · · · · · · · ·					
		M						
		·· · · · · · · · · · · · · · · · · · ·						
			· · · · · · · · · · · · · · · · · · ·					
		<del>-</del>						
		<del></del>						
XAMINER	I	DATE CONSIDERED						
·	/Lynette Umez Eronini/	(09/07/2006)						
			_					

SHEET 1 OF 2 ATTY. DOCKET NO. SERIAL NO. 005918 RECEIVED INFORMATION DISCLOSURE USA/FPS/MMCS/APC CITATION IN AN DEC 1 9 2003 APPLICATION DOG 8 1 330 (PTO-1449) Tedhnology Center 2100 **APPLICANT** SHANMUGASUNDRAM et al. **FILING DATE** GROUP August 31, 2001 2122 **U.S. PATENT DOCUMENTS EXAMINER'S** FILING DATE **INITIALS** PATENT NO. DATE NAME CLASS **SUBCLASS** 4,207,520 06/10/80 Flora et al. 324 238 04/06/78 4,209,744 06/24/80 Gerasimov et al. 324 241 03/27/78 4,609,870 09/02/86 Lale et al. 324 225 09/13/84 4,755,753 07/05/88 Chem 237 07/23/86 5,427,878 06/27/95 **Cortiss** 05/16/94 30 430 5,534,289 07/09/96 Bilder et al. 8 427 01/03/95 5,867,389 02/02/99 Hamada et al. 700 11/26/96 12 6,041,263 03/21/00 Boston et al. 700 10/01/97 6,077,412 06/20/00 Ting et al. 10/30/98 6,271,670 08/07/01 **Caffey** 02/08/99 6,400,162 06/04/02 Mailory et al. 688 07/21/00 US 2002/0077031 06/20/02 Johansson et al. 07/06/01 451 6 6,442,496 Pasadyn et al. 08/27/02 83 08/08/00 6,563,308 05/13/03 Nagano et al. 230 03/27/01 6,587,744 07/01/03 700 Stoddard et al. 06/20/00 FOREIGN PATENT DOCUMENTS **EXAMINER'S** Translation **INITIALS** PATENT NO. DATE COUNTRY CLASS **SUBCLASS** Yes No POTME WO 01/11679 02/15/01 WIPO WO 01/080306 10/25/01 **WIPO** X OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) Miller, G. L., D. A. H. Robinson, and J. D. Wiley. July 1976. "Contactless measurement of semiconductor conductivity by radio frequency-free-carrier power absorption." Rev. Sci. Instrum., Volume 47, No. 7. pp. 799 - 805.1999. "Contactless Bulk Resistivity/Sheet Resistance Measurement and Mapping Systems." www.Lehighton.com/fabtechl/index.hsml. 2000. "Microsense II Capacitance Gaging System." www.adetech.com. EXAMINER DATE CONSIDERED

SHEET 2 OF 2 ATTY. DOCKET NO. SERIAL NO. 005918 INFORMATION DISCLOSURE USA/FPS/MMCS/APC CITATION IN AN DEC 1 9 2003 **APPLICATION** (PTO-1449) Technology Center 2100 **APPLICANT** SHANMUGASUNDRAM et al. **FILING DATE** GROUP August 31, 2001 2122 FOREIGN PATENT DOCUMENTS **EXAMINER'S** Translation INITIALS PATENT NO. DATE COUNTRY CLASS **SUBCLASS** Yes No OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.) El Chemali, Chadi et al. July/August 2000. "Multizone uniformity control of a chemical mechanical polishing process utilizing a pre- and postmeasurement strategy." J. Vac. Sci. Technol. Volume 18, No. 4. pp. 1287 - 1296. March 5, 2001. "KLA-Tencor Introduces First Production-worthy Copper CMP In-situ Film Thickness and End-point Control System." http://www.kla-tencor.com/j/servlet/NewsItem?newsItemID=74. 2002. "Microsense II - 5810: Non-Contact Capacitance Gaging Module." www.adetech.com. 08 August 2003. PCT International Search Report from PCT/US03/08513. 14 October 2003. PCT International Search Report from PCT/US02/21942. 20 October 2003. PCT International Search Report from PCT/US02/19116. 23 October 2003. PCT International Preliminary Examination Report from PCT/US01/24910. "NanoMapper wafer nanotopography measurement by ADE Phase Shift." http://www.phaseshift.com/nanomap.shtml. ho deto. "Wafer flatness measurement of advanced wafers." http://www.phase-shift.com/wafer-flatness.shtml. 10 flate. "ADE Technologies, Inc. - 6360." http://www.adetech.com/6360.shtml. "3D optical profilometer MicroXAM by ADE Phase Shift." http://www.phase-shift.com/microxam.shtml. deta "NanoMapper FA factory automation wafer nanotopography measurement." http://www.phaseshift.com/nanomapperfa.shtml. no dato DATE CONSIDERED

SHEET 1 OF 1 INFORMATION DISCLOSURE ATTY, DOCKET NO. SERIAL NO. 09/943,955 005918 USA/ CITATION IN AN FPS/MMCS/APC **APPLICATION** (PTO-1449) APPLICANT SHANMUGASUNDRAM et al. FILING DATE GROUP AND PADERAL August 31, 2001 1765 U.S. PATENT DOCUMENTS **EXAMINER'S** FILING **ONITIALS** PATENT NO. DATE CLASS NAME SUBCLASS DATE OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.), Boning, Duane et al. "Run by Run Control of Chemical-Mechanical Polishing." IEEE Trans. October 1996. Vol. 19, No. 4. pp. 307-314. Moyne, James et al. "A Run-to-Run Control Framework for VLSI Manufacturing." Microelectronic L.J. HE Processing '93 Conference Proceedings. September 1993. Telfeyan, Roland et al. "Demonstration of a Process-Independent Run-to-Run Controller." 187th Meeting of L. J. M. E. the Electrochemical Society. May 1995. Moyne, James et al. "A Process-Independent Run-to-Run Controller and Its Application to Chemical-Mechanical Planarization." SEMI/IEEE Adv. Semiconductor Manufacturing Conference. August 15, 1995. Moyne, James et al. "Adaptive Extensions to be a Multi-Branch Run-to-Run Controller for Plasma Etching." P.J. W.E. Journal of Vacuum Science and Technology. 1995. Sachs, Emanuel et al. "Process Control System for VLSI Fabrication." no date Chaudhry, Nauman et al. "Active Controller: Utilizing Active Databases for Implementing Multi-Step LI. N.E. Control of Semiconductor Manufacturing." University of Michigan. pp. 1-24. no date Chaudhry, Nauman et al. "Designing Databases with Fuzzy Data and Rules for Application to Discrete M-E Control." University of Michigan. pp. 1-21. Chaudhry, Nauman A. et al. "A Design Methodology for Databases with Uncertain Data." University of Michigan. pp. 1-14. no data Khan, Kareemullah et al. "Run-to-Run Control of ITO Deposition Process." University of Michigan. pp. 1 -6. Modette Moyne, James et al. "Yield Improvement @ Contact Through Run-to-Run Control."

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

Measurement Strategy." University of Michigan. Mo date

Kim, Jiyoun et al. "Gradient and Radial Uniformity Control of a CMP Process Utilizing a Pre- and Post-

DATE CONSIDERED

**EXAMINER**